

Compal Confidential

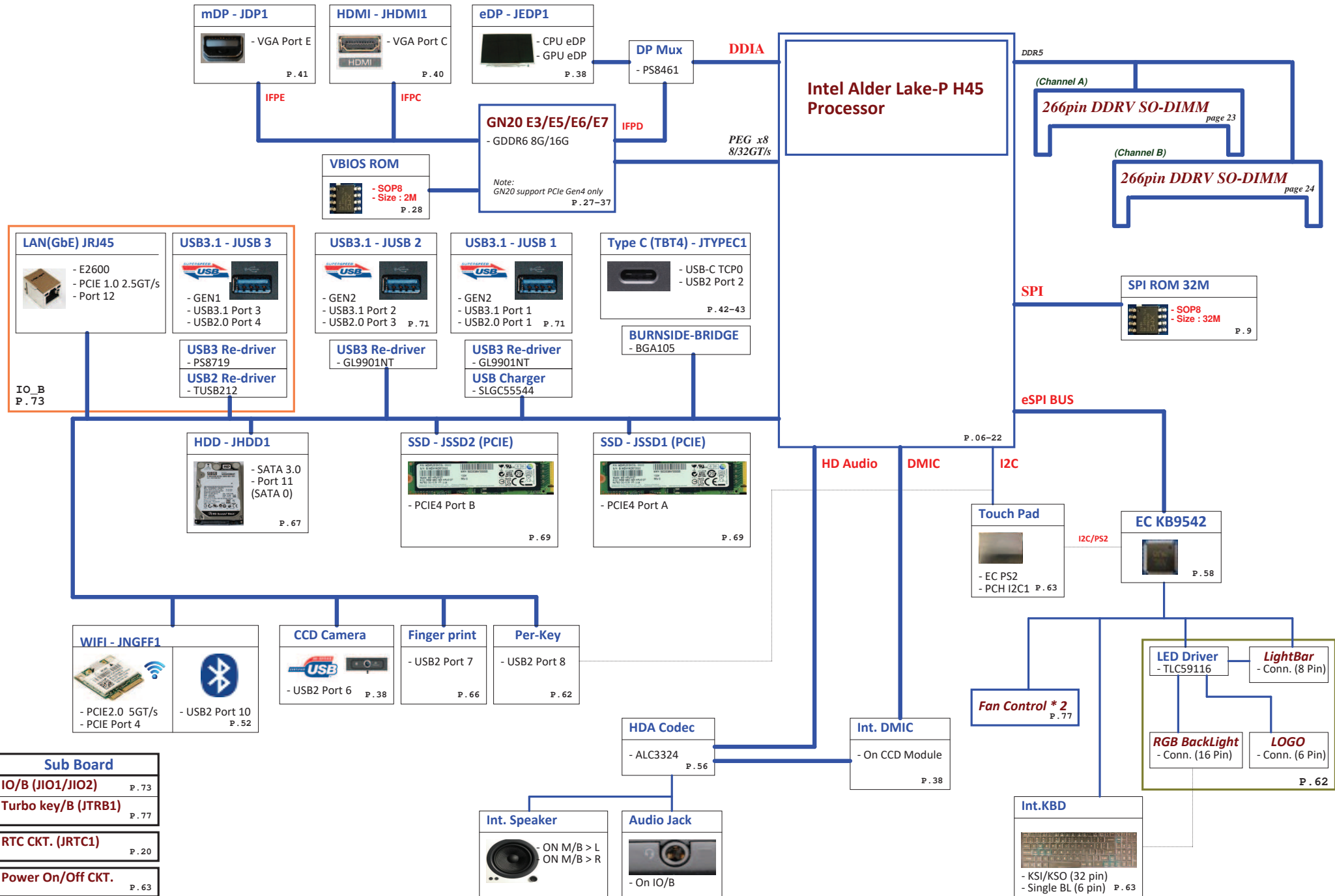
HH53A(60) MB Schematic Document

LA-L992P

Rev : 1B

2021.12.30

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2021/06/07	Deciphered Date	2023/12/31	Title	Cover Sheet
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Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2021/06/07	Deciphered Date	2023/12/31	Block Diagrams	
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Vcc	3.3V +/- 5%	EC Board ID Table for AD channel			
Ra	100K +/- 1%				
Board ID	Rb	Vmin	Vtyp	Vmax	EC AD
0	0		0.000 V	0.300 V	0x00 - 0x13
1	12K +/- 1%	0.347 V	0.345 V	0.360 V	0x14 - 0x1E
2	15K +/- 1%	0.423 V	0.430 V	0.438 V	0x1F - 0x25
3	20K +/- 1%	0.541 V	0.550 V	0.559 V	0x26 - 0x30
4	27K +/- 1%	0.691 V	0.702 V	0.713 V	0x31 - 0x3A
5	33K +/- 1%	0.807 V	0.819 V	0.831 V	0x3B - 0x45
6	43K +/- 1%	0.978 V	0.992 V	1.006 V	0x46 - 0x54
7	56K +/- 1%	1.169 V	1.185 V	1.200 V	0x55 - 0x64
8	75K +/- 1%	1.398 V	1.414 V	1.430 V	0x65 - 0x76
9	100K +/- 1%	1.634 V	1.650 V	1.667 V	0x77 - 0x87
10	130K +/- 1%	1.849 V	1.865 V	1.881 V	0x88 - 0x96
11	160K +/- 1%	2.015 V	2.031 V	2.046 V	0x97 - 0xA4
12	200K +/- 1%	2.185 V	2.200 V	2.215 V	0xA5 - 0xAF
13	240K +/- 1%	2.316 V	2.329 V	2.343 V	0xB0 - 0xB7
14	270K +/- 1%	2.395 V	2.408 V	2.421 V	0xB8 - 0xBF
15	330K +/- 1%	2.521 V	2.533 V	2.544 V	0xC0 - 0xC9
16	430K +/- 1%	2.667 V	2.677 V	2.687 V	0xCA - 0xD4
17	560K +/- 1%	2.791 V	2.800 V	2.808 V	0xD5 - 0xDD
18	750K +/- 1%	2.905 V	2.912 V	2.919 V	0xDE - 0xF0
19	NC	3.000 V	3.000 V		0xF1 - 0xFF

SD034120280

SD034150280

SD034200280

SD034270280

SD034330280

SD034430280

SD034560280

SD034750280

SD034100380

SD034130380

SD034160380

SD034200380

SD000001B80

SD000000G280

SD034330380

SD000000WM80

SD034560380

SD000000AL80

*PCB Version
*Key board type

Board ID	PCB Revision
0	50 Rev0.1
1	50 Rev0.2
2	50 Rev1.0
3	
4	50 Rev0.1+RGB
5	50 Rev0.2+RGB
6	50 Rev1.0+RGB
7	
8	60 Rev0.1
9	60 Rev0.2
10	60 Rev1.0
11	60 Rev1.A
12	60 Rev0.1+RGB
13	60 Rev0.2+RGB
14	60 Rev1.0+RGB
15	
16	
17	
18	60 Rev1.A+RGB
19	

BUS	Device	Address(7 bit)	Address(8bit)	
			Write	Read
I2C_1	TM-P3393-003 (Touch Pad)			
SOC_SMBCLK	DIMM1	0xA0	0xA1	0xA0
	DIMM2	0xA3	0xA4	0xA3
SOC_SML1	Realtek RTS5452E	0x38		
EC_CK/DA (Port0) (+3VLP)	BQ24800 (Charger IC)	0x12	0001_0010	
	BATTERY PACK	0x16		
EC_CK/DA (Port1) (+3VS)	GN20 E3/E5/E7 (VGA)	0x9E		
	Thermal Sensor (NCT7718W)	0x98	1001_1001b	1001_1000b
	Thermal Sensor (G781)	0x9A	1001_1011b	1001_1010b
EC_CK/DA (Port2)	LED Driver (59116F)	0xC0		
	eDP Mux(P58461E)	0x10-0x2F		
	LightBar	0x5B		
EC_CK/DA (Port3)	Realtek RTS5452E	0x62		0100_0110b
EC_CK/DA (Port5)	KC3810	TBD		

43 Level	Description	BOM Structure
431AUNBOL01	HH53A GN20-E3 QXZR BRL	12VFAN@/CHG@/CMC@/CNVi@/FP@/DA@/DDR4@/DEBUG@/DP@/GLITCH@/GN20E@/HDD@/KC3810@/LB@/LED14P@/LOGOBL@/NGSYNC@/OVRM@/PERKEY@/TMS@/TypeC@/VGA@/X4E@/2012@/GN20E3@/15ES2@/EVT@/SLGC55544@/X76SAM6G@/X76UPIGEN2/COST@
431AUNBOL02	HH53A GN20-E3 QXZR B3L	
431AUNBOL03	HH53A GN20-E5 QY0Z BRL	
431AUNBOL04	HH53A GN20-E5 QY0Z B3L	
431AUNBOL05	HH53A GN20-E7 QXZH BRL	

V : Must V : Options

Item (X43 / X76)	BOM Structure	Item (X43 / X76)	BOM Structure
Unpop	@	USB Chager	CHG@ V
Connector	CONN@	XDP	CMC@ V
PCB	DAZ@ V	KC3810	KC3810@ V
ADL-P		Intel CNVi	CNVi@ V
		FOR UART debug	UART@ V
		EC debug	DEBUG@ V
FJ8071504786411 Q07K	i9SUPQS@ V	Finger Print	FP@ V
FJ8071504785804 SRLCY L0	i7MP@ V	KB LED driver	LED14P@ V
FJ8071504786106 SRLD1 L0	i5MP@ V	Thermal sensor	TMS@ V
GN20E GPU	GN20E@ V	GLITCH	GLITCH@ V
GN20-E3-A1	GN20E3@ V	CMC	CMC@ V
GN20-E5-A1	GN20E5@ V	Power PRIM Design	PREM@ V
		TypeC Port	TypeC@ V
GN20-E7-A1	GN20E7@ V	HDD	HDD@ V
dGPU circuit	VGA@ V	Lightbar	LB@ V
GPU OVRM	OVRM@ V	Acer Logo backlight	LOGOBL@ V
mDP	DP@ V	DDR4 strap	DDR4@ V
		DDR5 strap	DDR5@ V
		CW3046	CW3046@ V
		SLGC55544	SLGC55544@ V
		XTAL Package 2012	2012@ V
		XTAL Package 3215	3215@ V
		DD5 Support	GSYNC@ V
		DDS Not Support	NGSYNC@ V
		12V FAN	12VFAN@ V

Item(X4E)un-pop	BOM Structure
EMI require reserve	XEMI@
EMC require reserve	XEMC@
ESD require reserve	XESD@
RF require reserve	@RF@

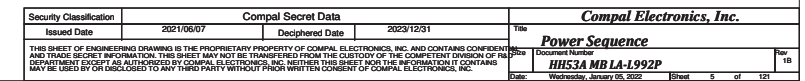
EC Board ID	BOM Structure
HH53A 0.1 without RGB	R01@ V
HH53A 0.1 with RGB	R01RGB@ V
HH53A 0.2 without RGB	R02@
HH53A 0.2 with RGB	R02RGB@

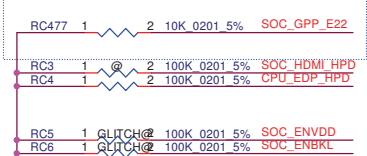
Item (X4E) pop	BOM Structure
EMI requirement	EMI@ V
EMC requirement	EMC@ V
ESD requirement	ESD@ V
RF require reserve	RF@ V
FP EMC requirement	FPEMC@ V
FP ESD requirement	FPESD@ V
TBT ESD requirement	BL_ESD@ V
TBT EMC requirement	BL EMC@ V
X4EAUNBOL01	EMC M/B 60 LAL992

Item (X76)	BOM Structure
OVRM-uPI Gen2	X76UPIGEN2@
OVRM-ON Gen2	X76ONGEN2@
OVRM-uPI Gen1	X76UPIGEN1@
OVRM-ON Gen1	X76ONGEN1@
VRAM-SAMSUNG 6G	X76SAM6G@
VRAM-HYNIX 6G	X76HYN6G@
VRAM-Mircon 6G	X76MIR6G@
VRAM-SAMSUNG 8G	X76SAM8G@
VRAM-HYNIX 8G	X76HYN8G@
VRAM-Mircon 8G	X76MIR8G@

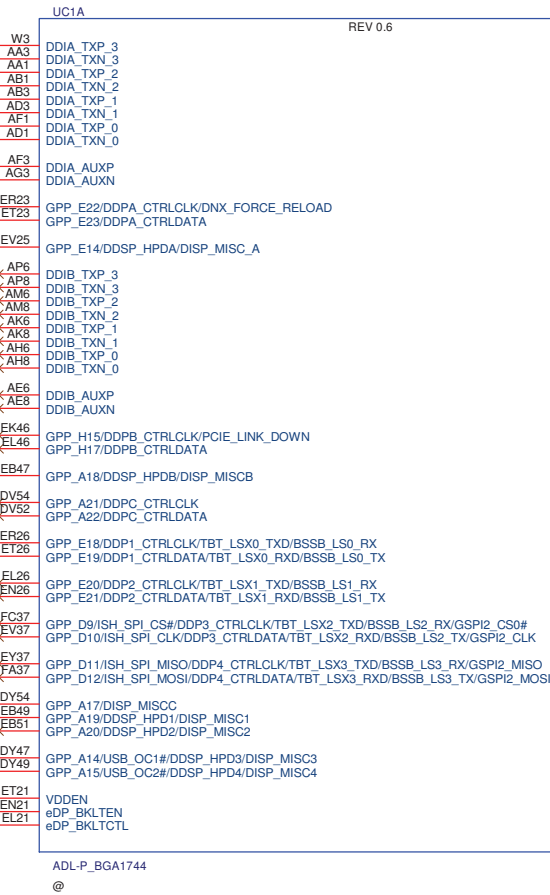
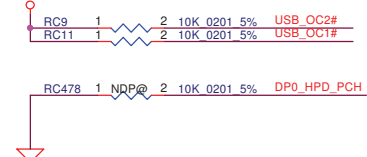
X76952BOL05 - UPI Gen2 OVRM
X76952BOL06 - ON Gen2 OVRM
X76952BOL11 - UPI Gen1 OVRM
X76952BOL12 - ON Gen1 OVRM
X76952BOL01 - SAMSUNG 6G
X76952BOL02 - HYNIX 6G
X76952BOL13 - Mircon 6G
X76952BOL03 - SAMSUNG 8G
X76952BOL04 - HYNIX 8G
X76952BOL09 - Mircon 8G

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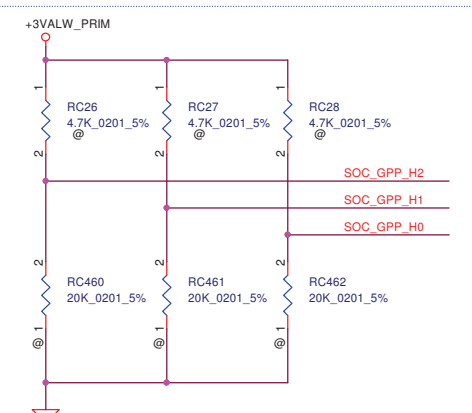
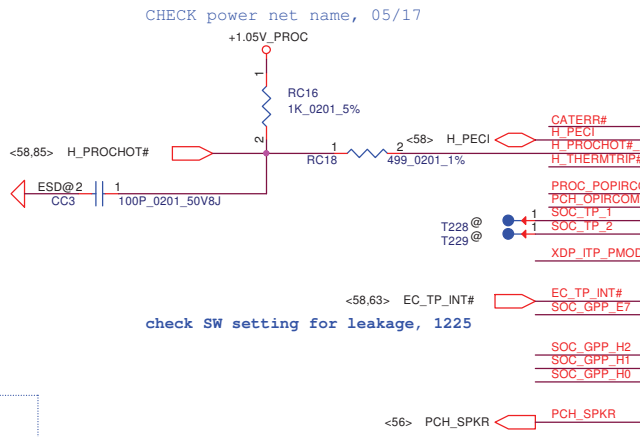
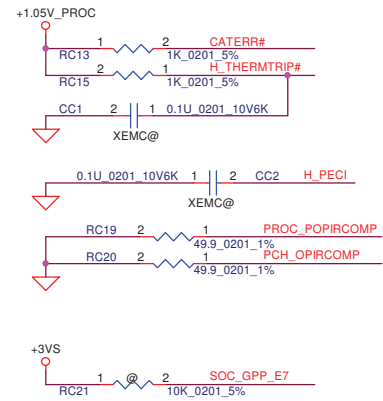




+3VALW_PRIM



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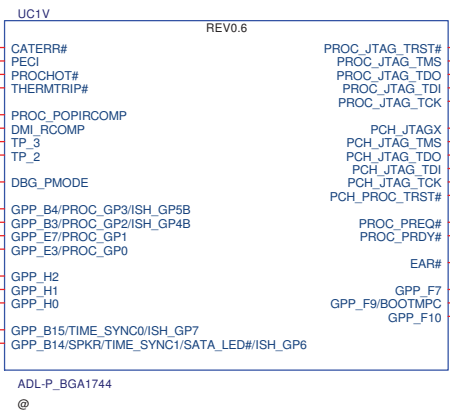
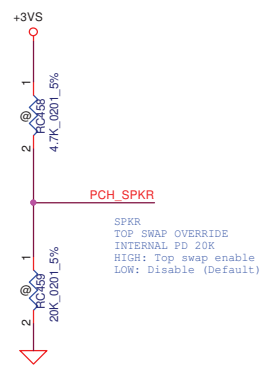
SOC_GPP_H2
BOOT STRAP3 - BIT3
This is bit 1 of a total of 4-bit encoded pin straps for boot configuration.
Refer to Boot Strap 0 (on GPP_C5) for the encoding.
INTERNAL PD 20K

SOC_GPP_H1
BOOT STRAP1 - BIT2
This is bit 1 of a total of 4-bit encoded pin straps for boot configuration.
Refer to Boot Strap 0 (on GPP_C5) for the encoding.
INTERNAL PD 20K

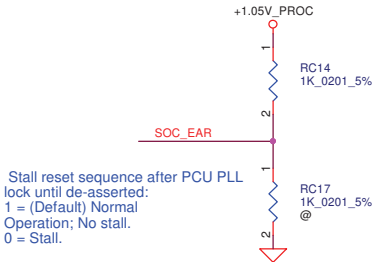
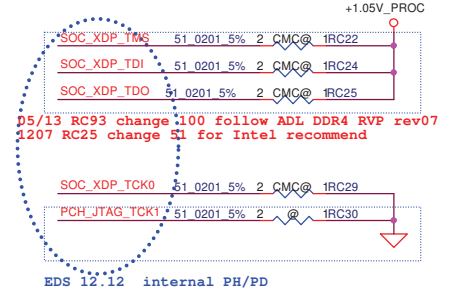
SOC_GPP_H0
BOOT STRAP1 - BIT1
This is bit 1 of a total of 4-bit encoded pin straps for boot configuration.
Refer to Boot Strap 0 (on GPP_C5) for the encoding.
INTERNAL PD 20K

SOC_WWAN_RST# (No used)
This strap should sample LOW. There should NOT be any on-board device driving it to opposite direction during strap sampling.
INTERNAL PD 20K

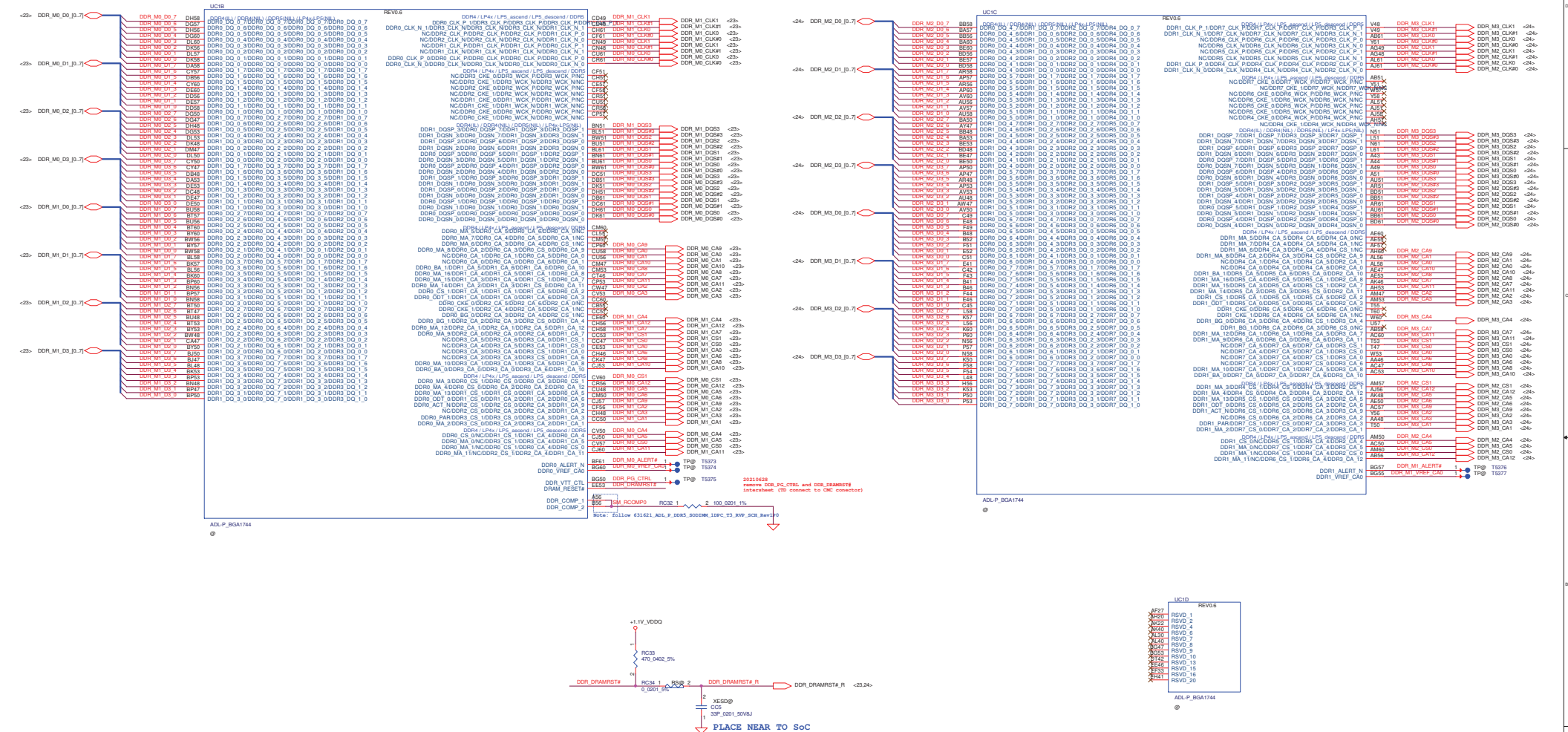
Strap Pin

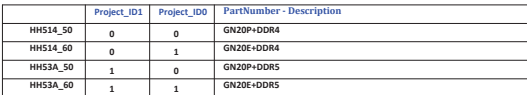
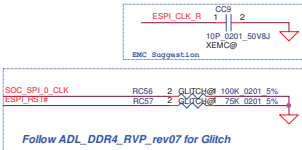


- R6 SOC_XDP_TRST#
- U8 SOC_XDP_TMS
- AA6 SOC_XDP_TDI
- W8 SOC_XDP_TDO
- N6 SOC_XDP_TCK
- N8 SOC_XDP_TCK0
- U6 SOC_XDP_TMS
- AA8 SOC_XDP_TDO
- W6 SOC_XDP_TDI
- FB6 PCH_JTAG_TCK1
- R8 SOC_XDP_TRST#
- L6 XDP_FREQ#
- L8 XDP_PRDY#
- AF25 SOC_EAR
- EN28
- ET28
- EF28



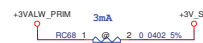
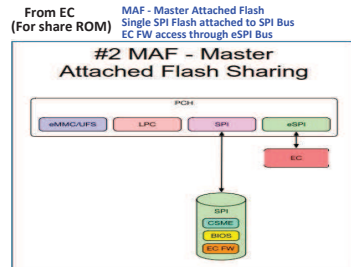
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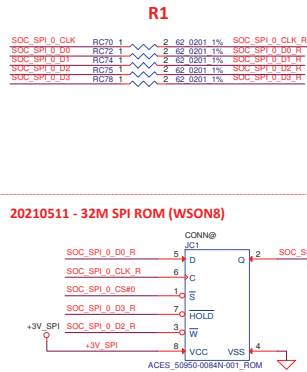


*** SPI0 3 load topology:
R1 is required 15 ohm \pm 10% for 1.8V, 33 ohm \pm 5% for 3.3V.
R2 is required 10 ohm for 1.8V and 3.3V.
It is an optional to have R2 on the channel. It can be removed to reduce BOM cost

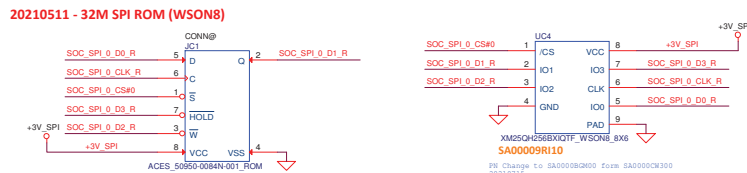
*** CS# does not need series resistor

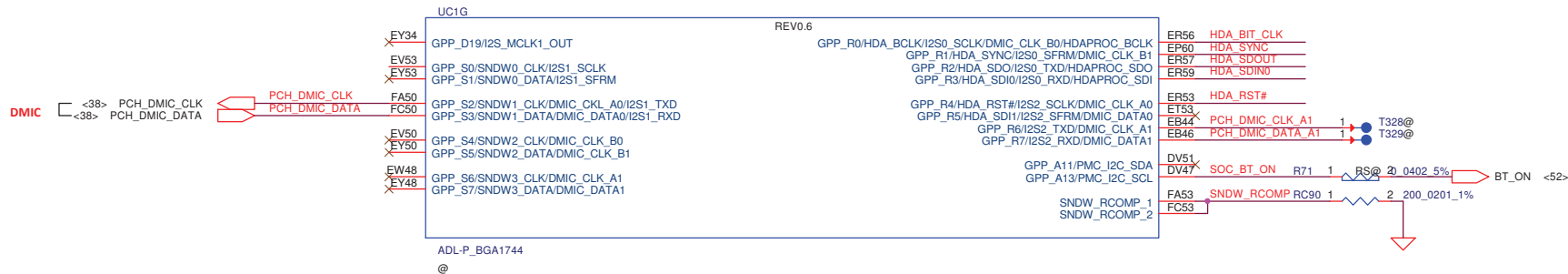


20210528 remove TPM



20210604
remove 16M SPI ROM



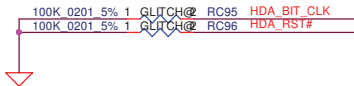


HDA for AUDIO

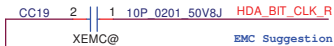
20200819

- Remove RC180 BOM config., must pop of PDG.

<56>	HDA_SDOOUT_R	HDA_SDOOUT_R	RC31	1	2	33	0201	5%	HDA_SDOOUT
<56>	HDA_BIT_CLK_R	HDA_BIT_CLK_R	RC32	1	2	33	0201	5%	HDA_BIT_CLK
<56>	HDA_SYNC_R	HDA_SYNC_R	RC93	1	2	33	0201	5%	HDA_SYNC
<56>	HDA_RST#_R	HDA_RST#_R	RC94	1	2	33	0201	5%	HDA_RST#
<56>	HDA_SDI0	HDA_SDI0							



Follow
627205_ADL P_PDG for Glitch



To Enable ME Override

HDA_SDOOUT
FLASH_DESCRIPTOR SECURITY OVERRIDE
INTERNAL PD 20K
HIGH: OVERRIDEN
LOW: SECURITY MEASURES NOT OVERRIDEN (DEFAULT)

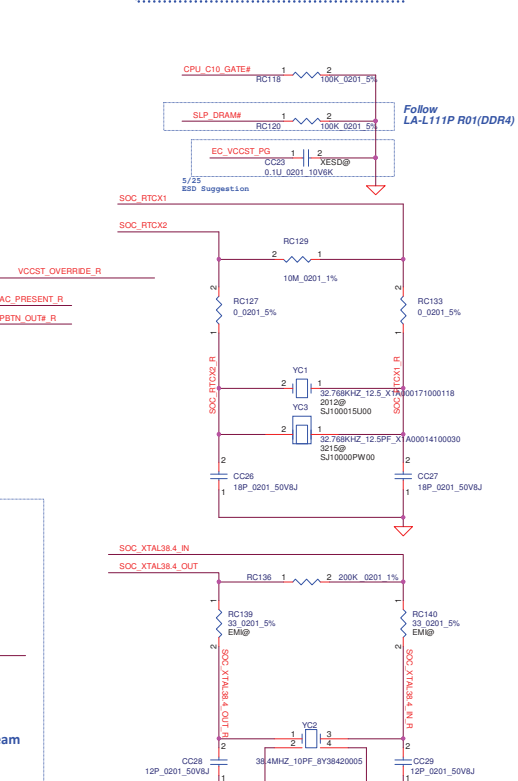
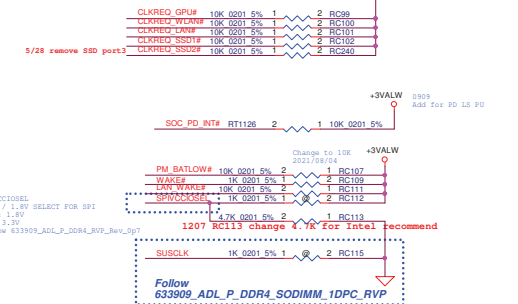
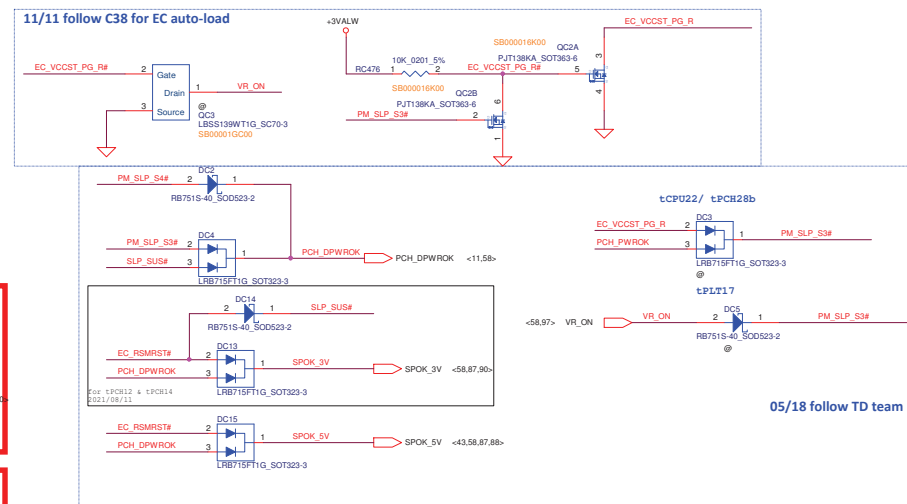
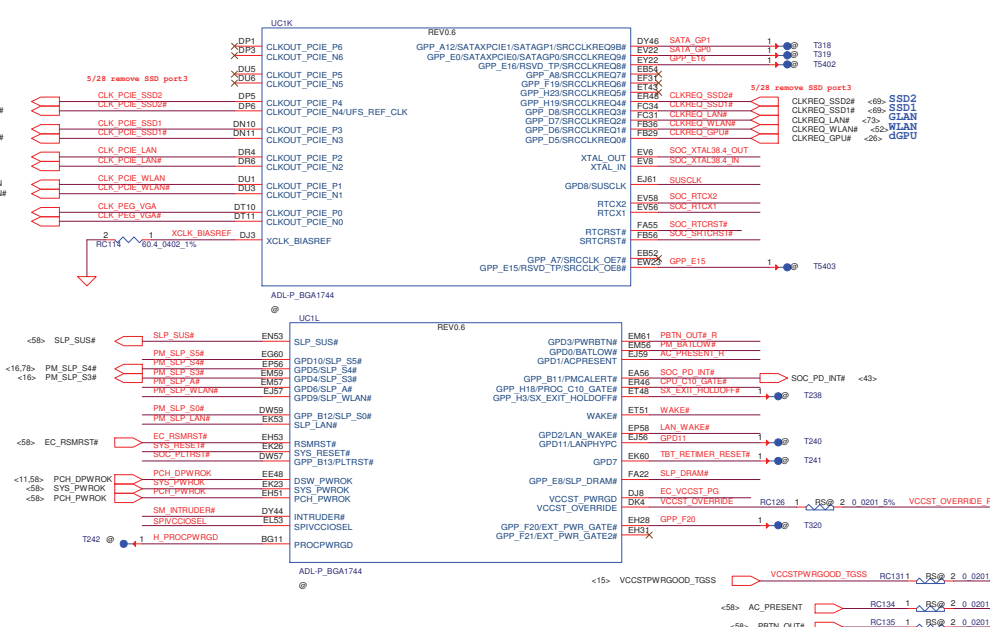
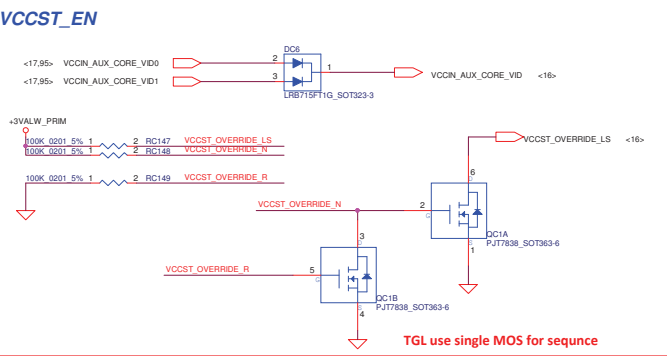
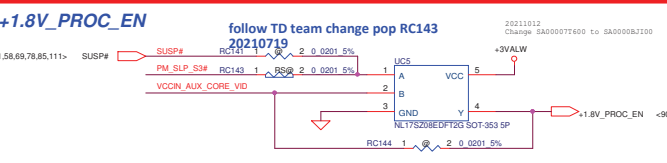
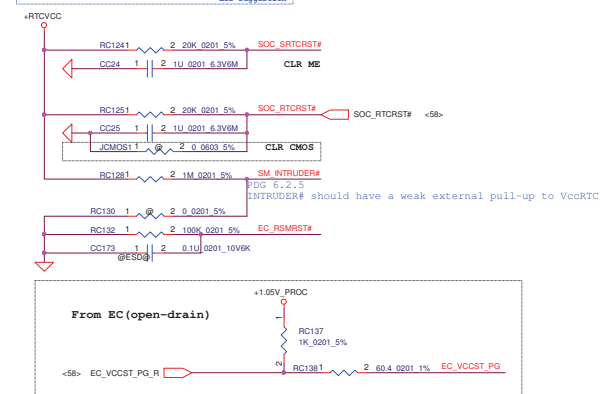
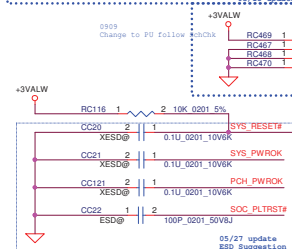
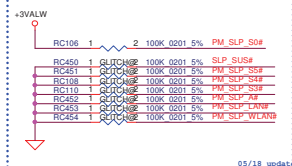


572631_ICL_PCH_LP_EDS_Vol_1_Rev_0p7
VCCPGPPR: Audio Power 3.3V, 1.8V, or 1.5V
Need to sync with codec VDDIO

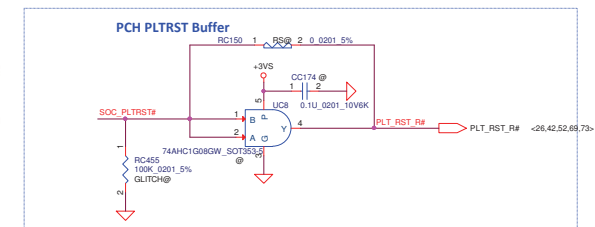
HDA_SYNC	CC12	@RF@1	2	22P	0201	25V8
HDA_BIT_CLK	CC13	@RF@1	2	22P	0201	25V8
HDA_SDOOUT	CC14	@RF@1	2	22P	0201	25V8
HDA_SDI0	CC15	@RF@1	2	22P	0201	25V8
HDA_RST#	CC16	@RF@1	2	22P	0201	25V8
PCH_DMIC_CLK	CC17	@RF@1	2	22P	0201	25V8
PCH_DMIC_DATA	CC18	@RF@1	2	22P	0201	25V8

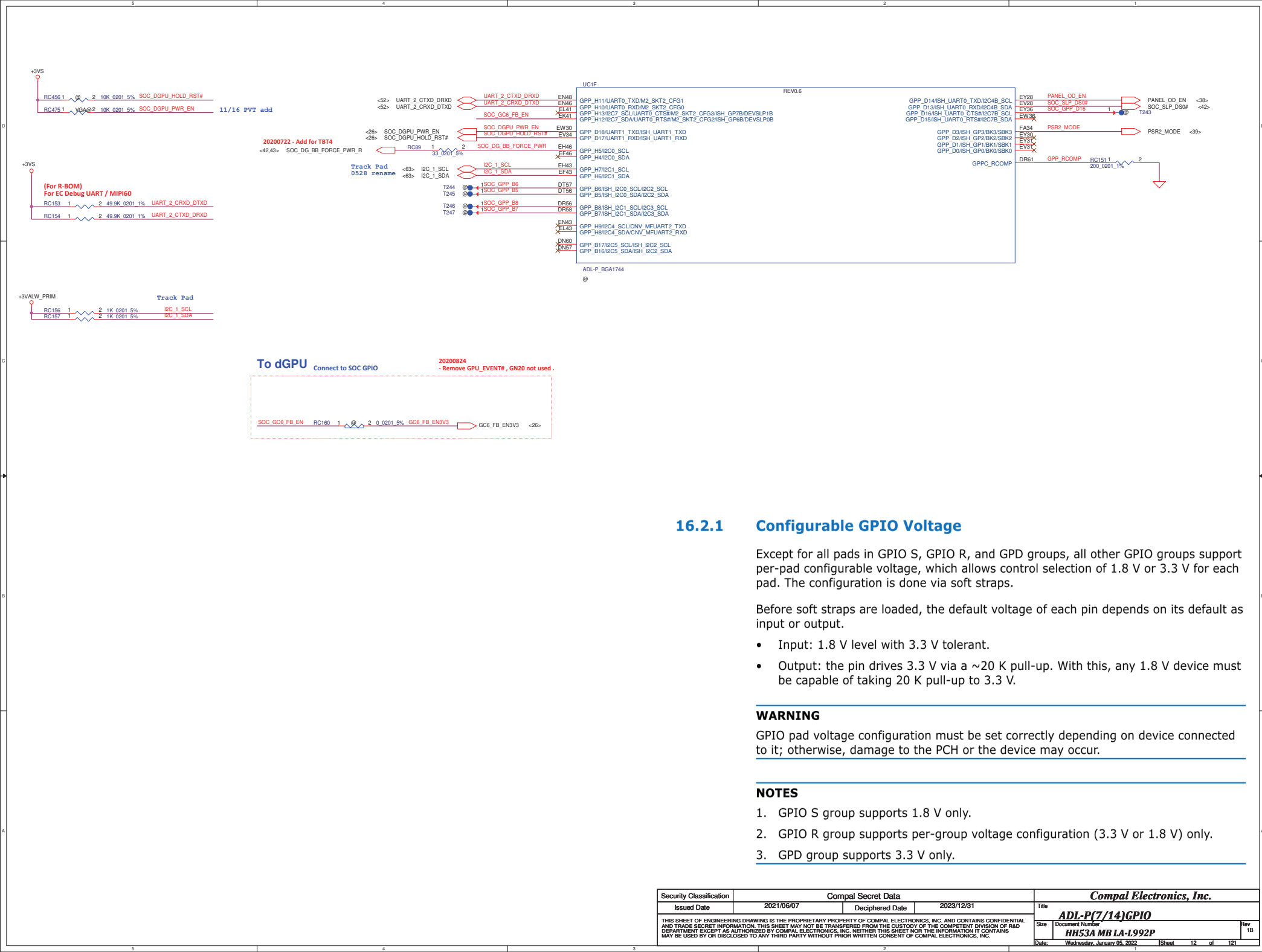
Close SOC

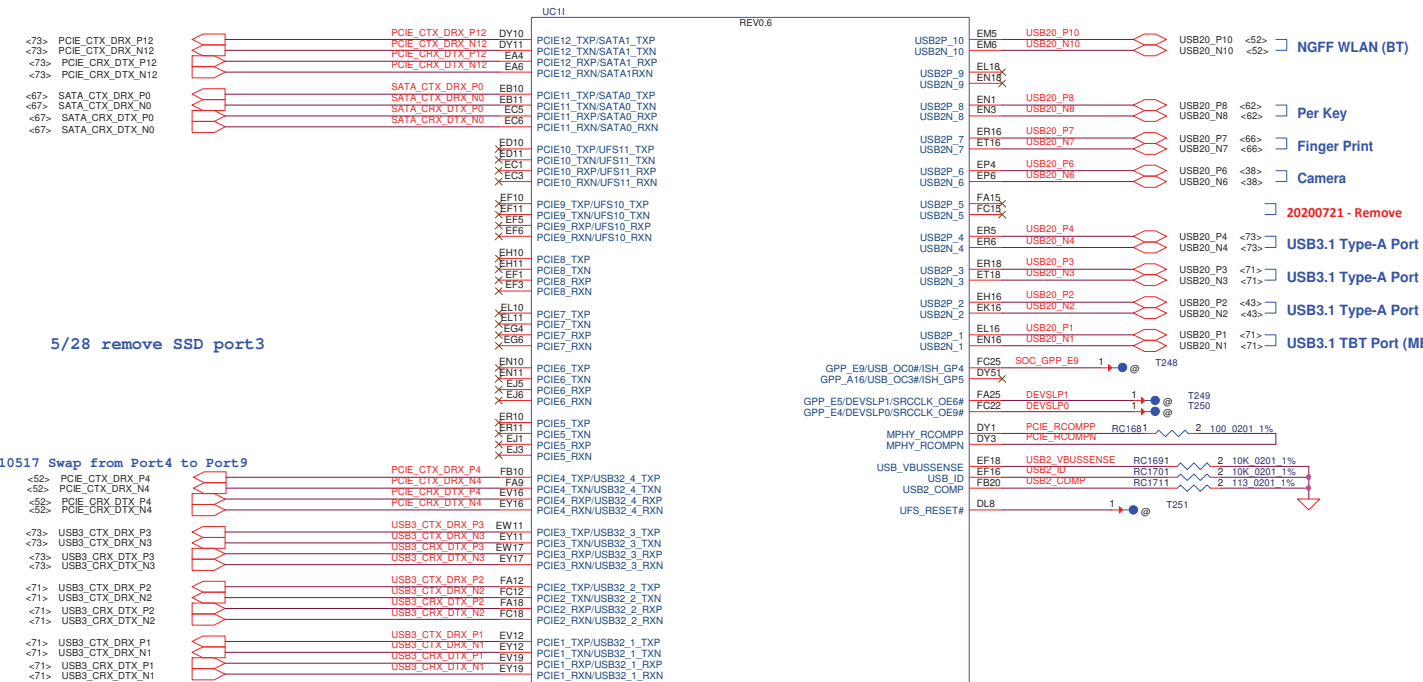
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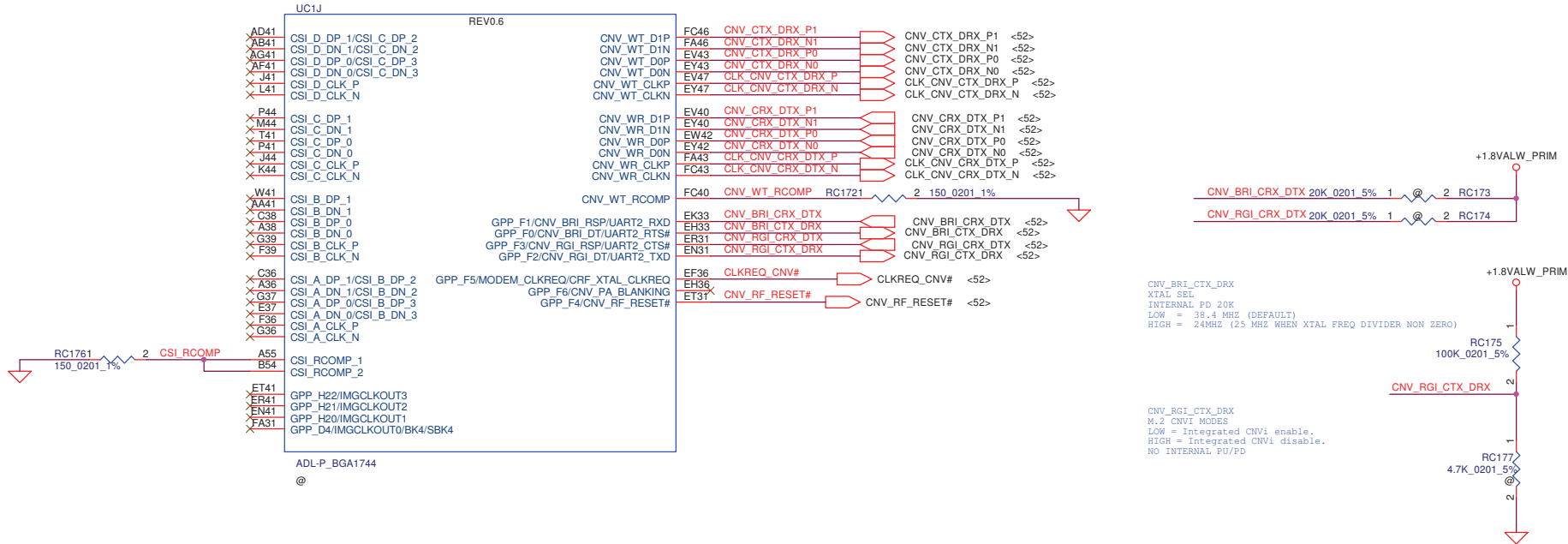
Signal Name	Type	SSC Capable	Description
<ul style="list-style-type: none"> CLKOUT_PCIE_P [6:0] CLKOUT_PCIE_N [6:0] 	0	Yes	PCI Express* Clock Output: Serial Reference 100 MHz PCIe* specification compliant differential output clocks to PCIe* devices <ul style="list-style-type: none"> CLKOUT_PCIE_P/N [6:0] = Can be used for PCIe* Gen1, Gen2, and Gen3 support CLKOUT_PCIE_P/N [4, 3, 0] = Must be used for PCIe* Gen4 support





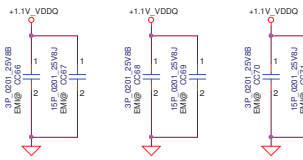


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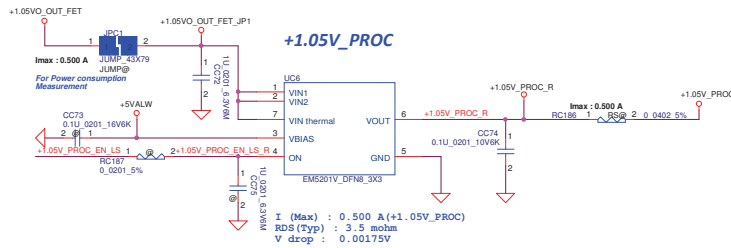
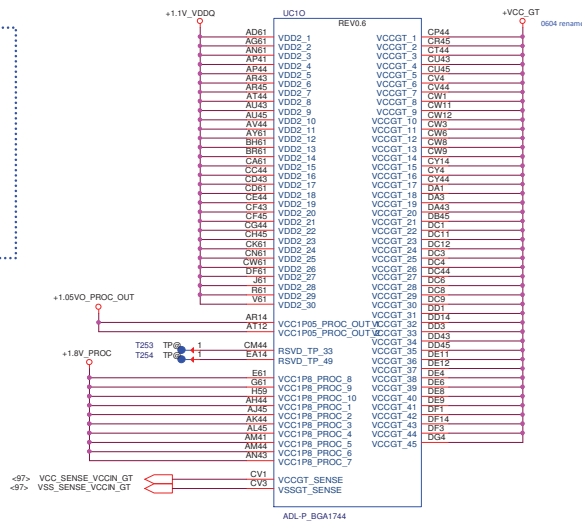


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627333_ADL_P_DDR4_RVP_TDK_Rev0p7



CC66 / CC68 / CC70 change PN to SE000000SJ00
(S CER CAP 3P 25V B NPO 0201)
form sourcer suggestion
2021/0728



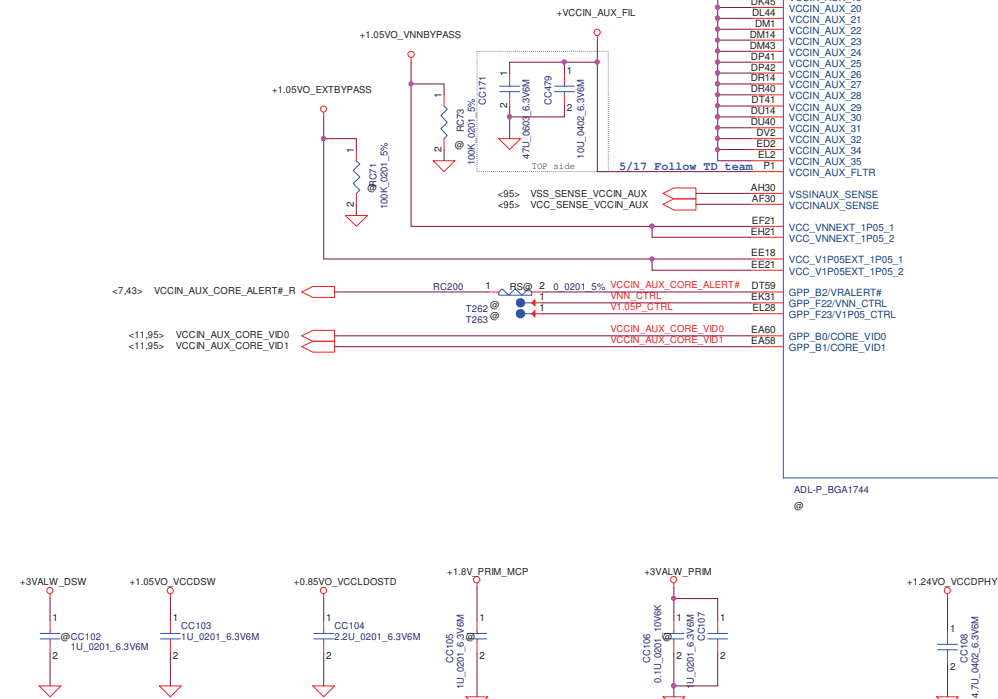
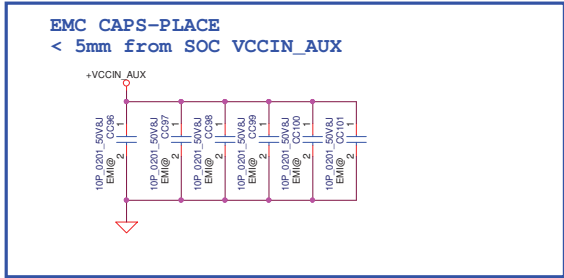
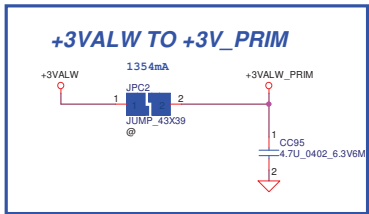
RC185 1 2 0 0402 5%

Sideband signals (PECI, THERMTRIP, PROCHOT, VCCST_PWRGD, SVID) should be connected to **VCC1P05_PROC** rail when there is Power Gate or to **VCC1P05_OUT_FET** (which should be shorted to VCC1P05_OUT_FET) rail when there is no Power Gate.

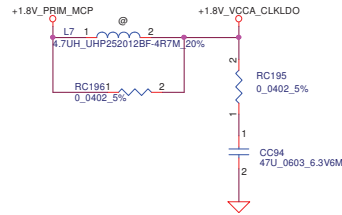
[illegible]

TD team DORS circuit is 10U, 0402 (8

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PLACE CAP CLOSEST POSSIBLE TO THE BGA



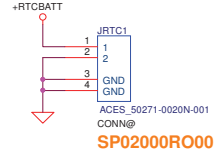
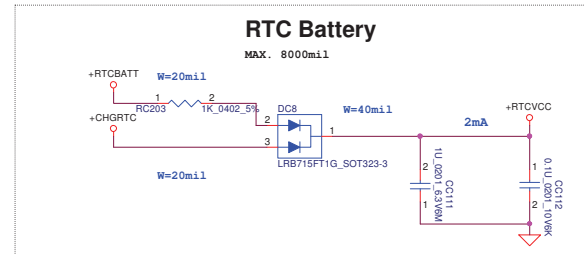
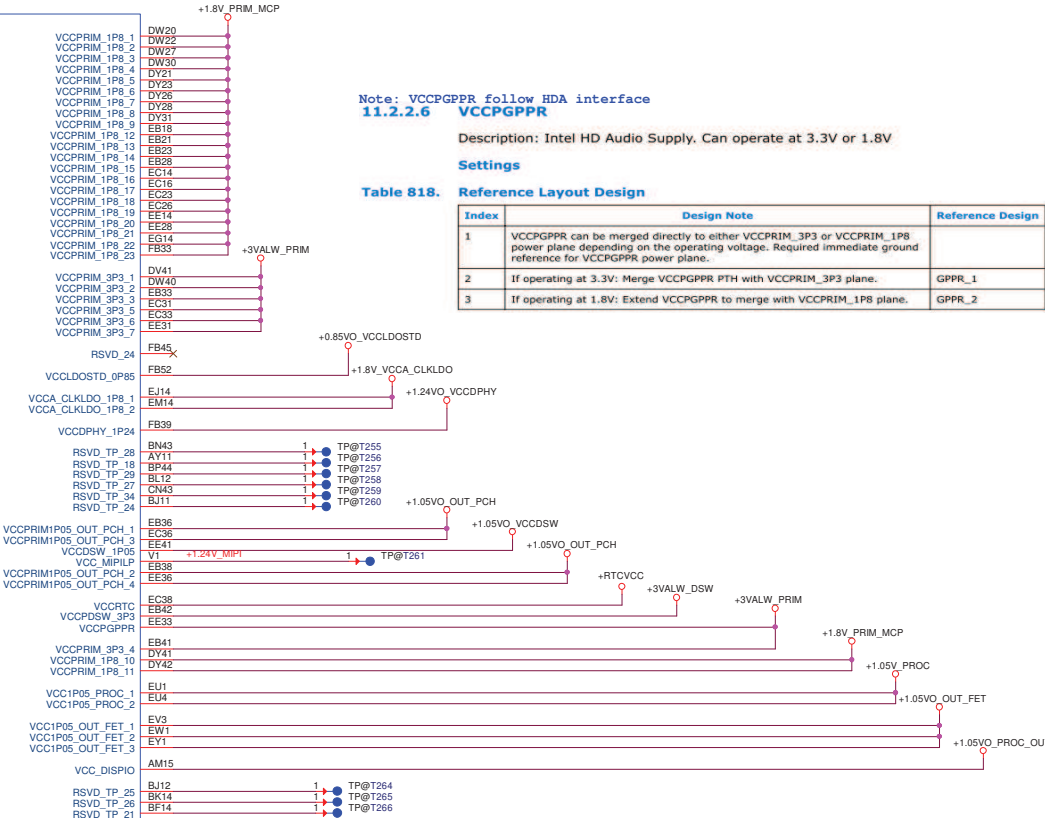
Note: VCCPGPPR follow HDA interface
1.2.2.6 VCCPGPPR

Description: Intel HD Audio Supply. Can operate at 3.3V or 1.8V

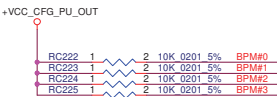
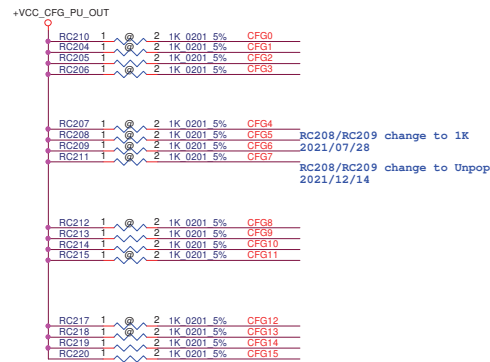
Settings

Table 818. Reference Layout Design

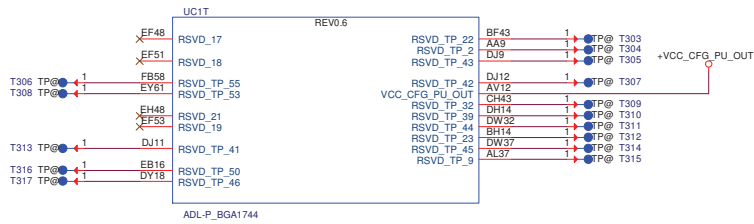
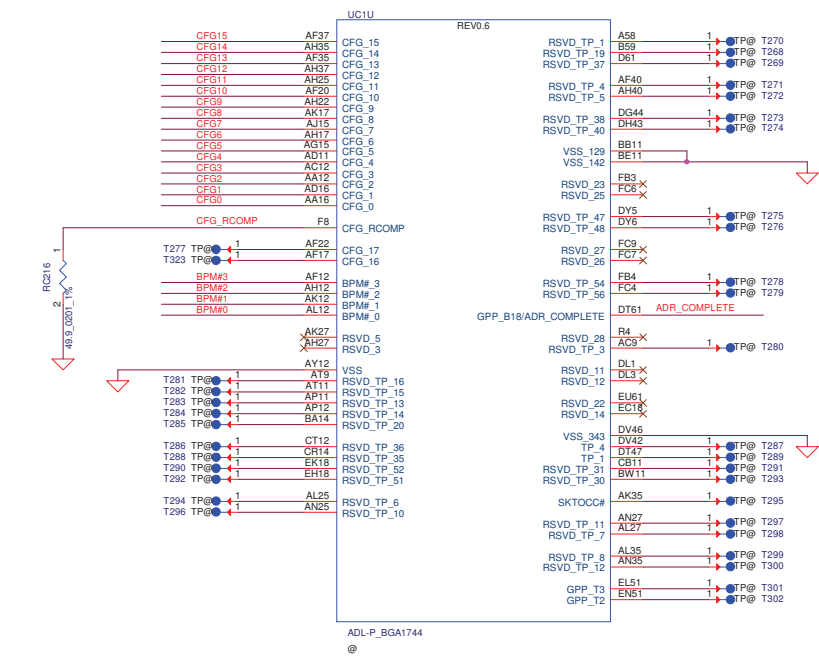
Index	Design Note	Reference Design
1	VCCPGPPR can be merged directly to either VCCPRIM_3P3 or VCCPRIM_1P8 power plane depending on the operating voltage. Required immediate ground reference for VCCPGPPR power plane.	
2	If operating at 3.3V: Merge VCCPGPPR PTH with VCCPRIM_3P3 plane.	GPFR_1
3	If operating at 1.8V: Extend VCCPGPPR to merge with VCCPRIM_1P8 plane.	GPFR_2



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Signal: CFG4 (Ref : MoW WW37)
The CFG [4] pin is made Reserved. Pull -Down termination recommendation is added wherever applicable.



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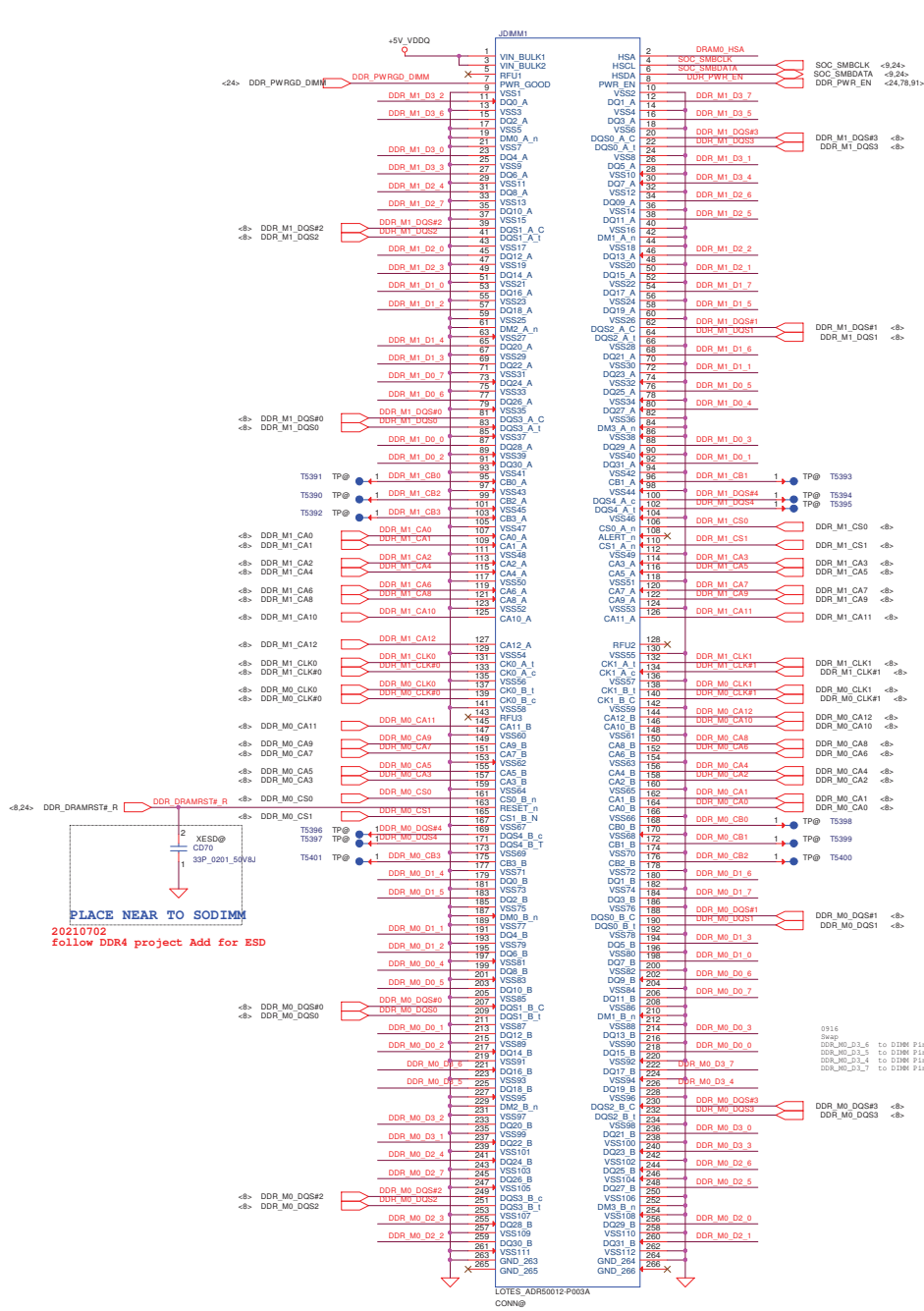
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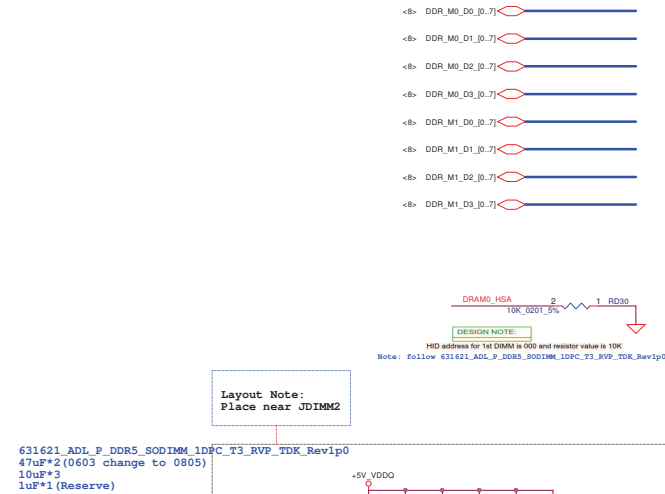
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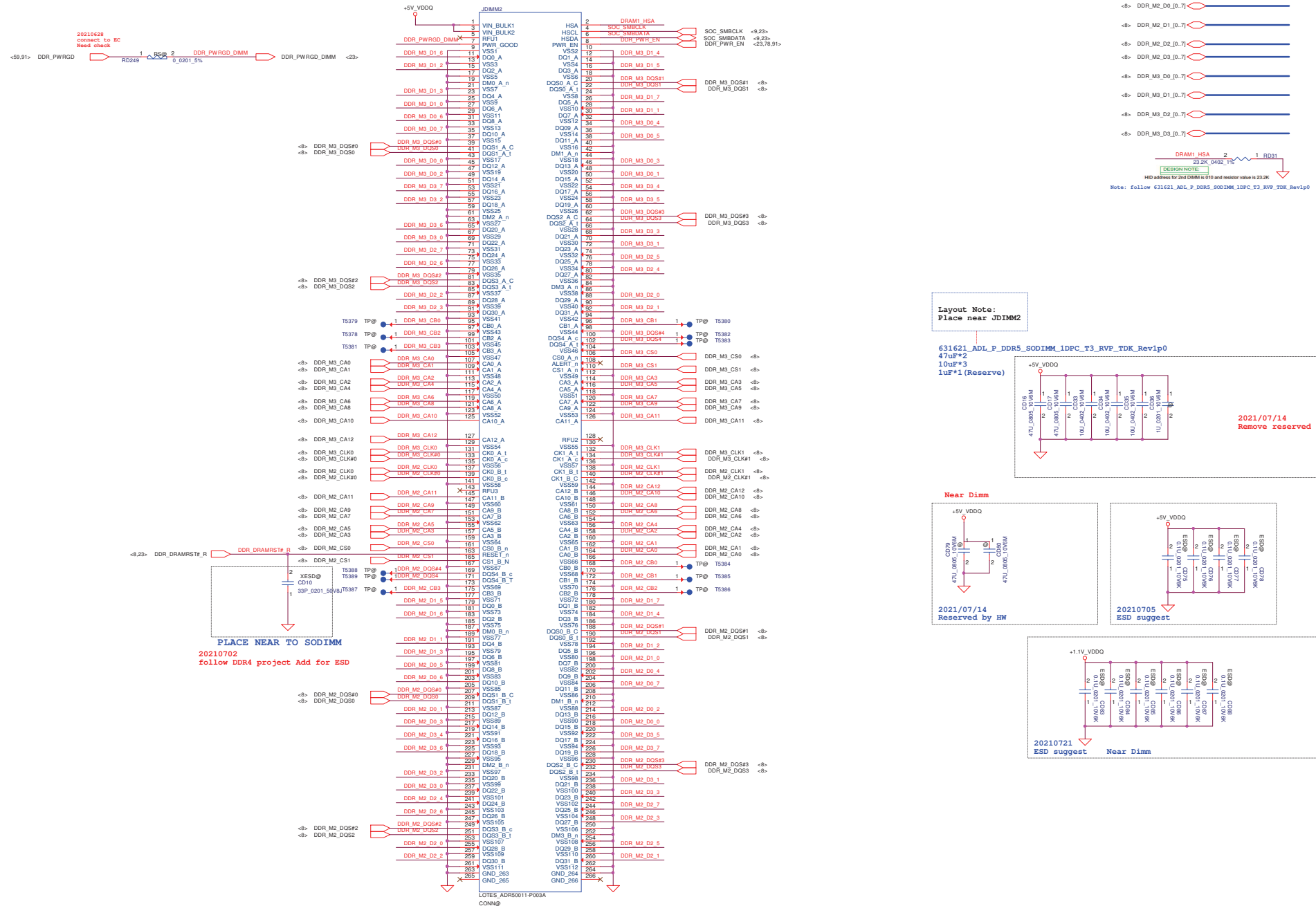


Part Number: SP012010053
Part Value: LOTES_ADR50012-P003A

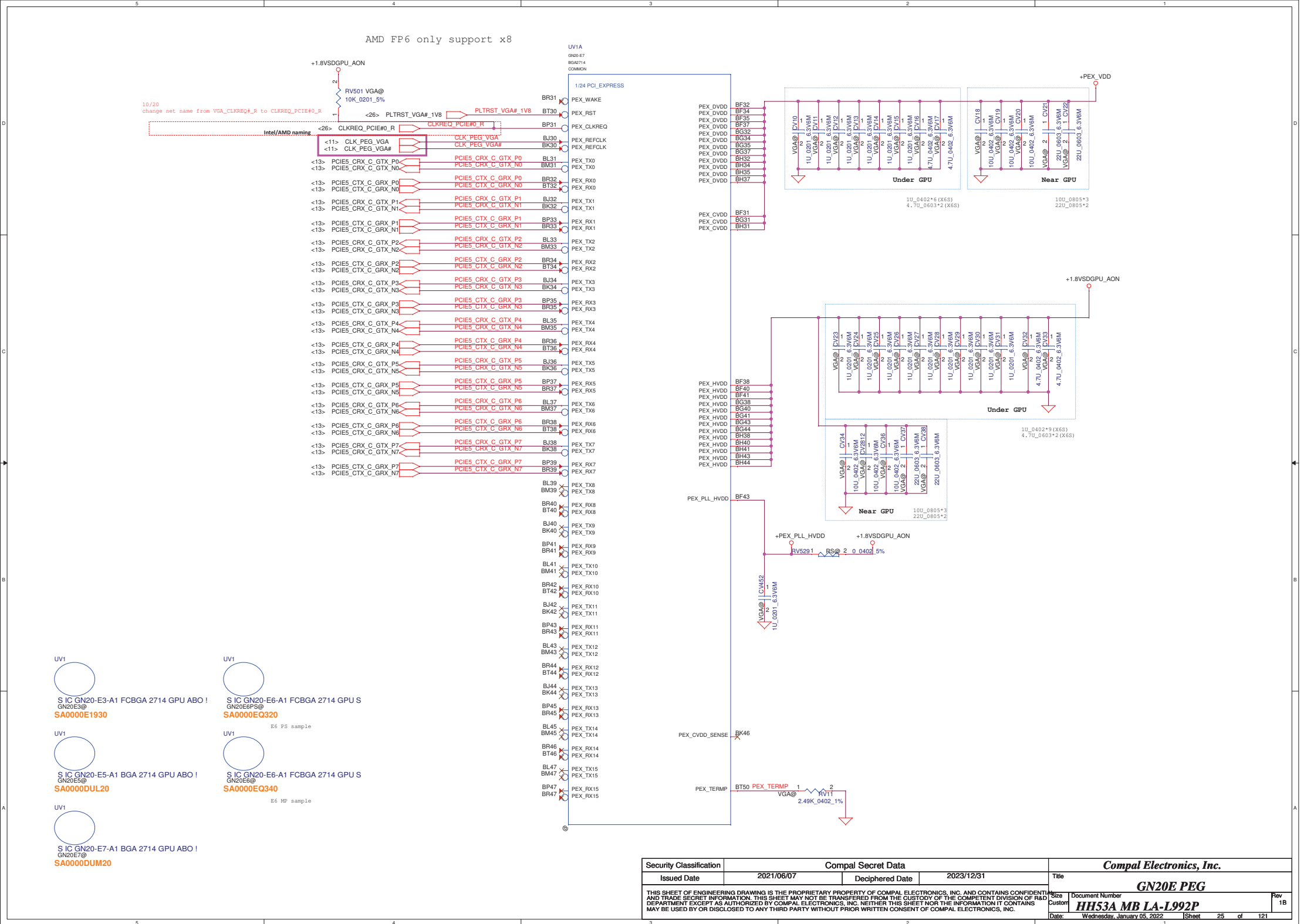


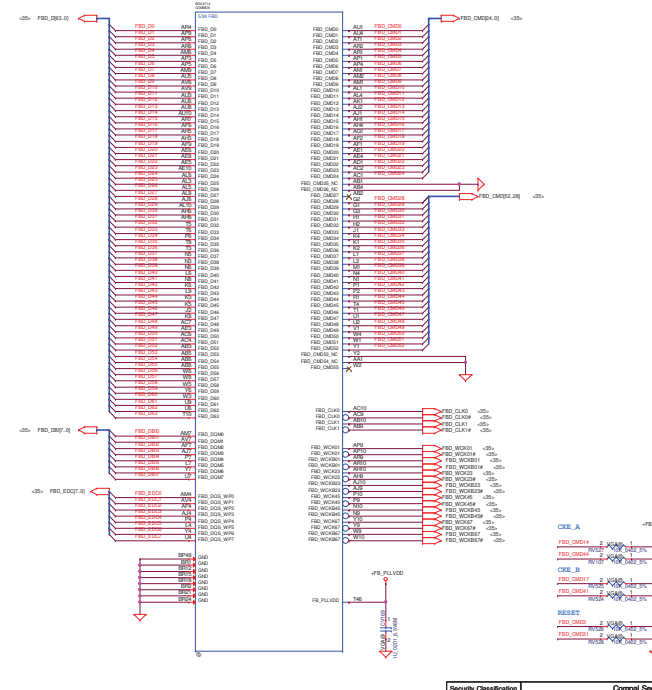
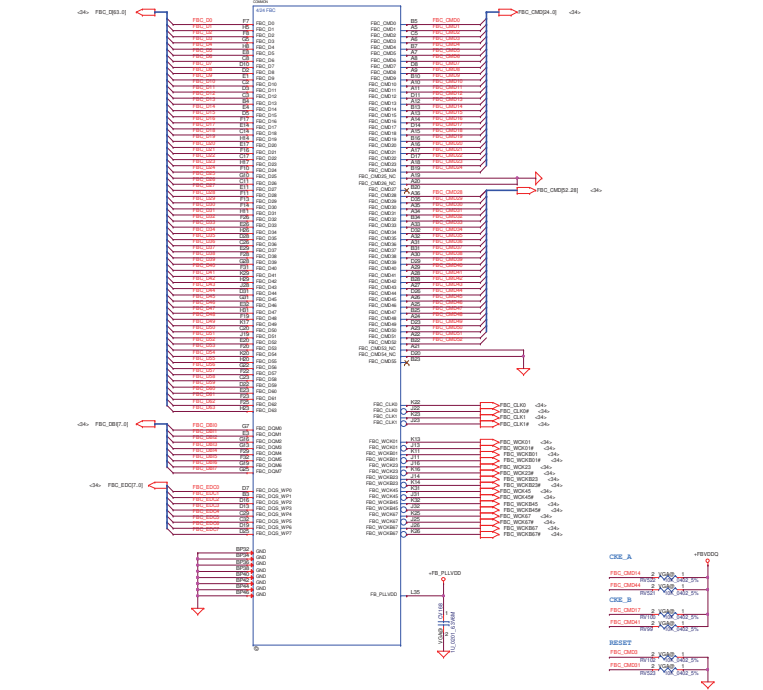
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Issued Date	2021/06/07	Deciphered Date	2023/12/31	DDRS CHMO: DIMMO	
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Non-Interleaved Memory



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Strap Pins See Note

Functions Selected by This Strapping

STRAP1	STRAP2	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
L	L	L	0	0	0	0
L	L	H	0	0	0	1
L	H	L	0	0	0	1
L	H	H	0	0	0	1
H	L	L	0	0	1	0
H	L	H	0	0	1	0
H	H	L	0	0	1	0
H	H	H	0	0	1	0
L	L	L	1	0	0	0
L	L	H	1	0	0	0
L	L	L	1	0	1	0
L	L	H	1	0	1	0
L	L	L	1	1	0	0
L	L	H	1	1	0	0
L	L	L	1	1	1	0
L	L	H	1	1	1	0

Memory Density	Vendor	Manufacture part Number	Die Revision	Strap	Strap2	Strap1	Strap0	GN20-E7	GN20-E5	GN20-E3	GN20-E1	GN20-E3	GN20-E5
8Gb	Samsung	K4280325BC-HC14	C-die	0x0	L	L	L	V	V	V (x6)	V (x6)	V	V
8Gb	Micron	MT61K256M32JE-14:A	A-die	0x1	L	L	H	V	V	V (x6)	V (x6)	V	V
8Gb	Hynix	H56C8H24A1R-S2C	A-die	0x2	L	H	L	V	V	V (x6)	V (x6)	V	V
16Gb	Samsung	K42AF325BM-HC14	M-die	0x9	L	M	L	V	V	V (x6)	V (x6)	V	V

Table 5. GN20-E3 GDDR6 Recommended Memories

Memory Density	Vendor	Manufacture Part Number	Die Revision	Strap	Memory Speed Grade	Date Code Alert	Qual. Plan	Status	Supported GPU Memory
8Gb	Samsung	K4280325BC-HC14	C-die	0x0	14 Gbps	2021	Full	Production ready	Q3 or later
8Gb	Hynix	H56C8H24A1R-S2C	A-die	0x2	14 Gbps	2021	Full	Production ready	Q3 or later
8Gb	Micron	MT61K256M32JE-14:A	A-die	0x1	14 Gbps	2021	Full	Production ready	Q3 or later

Table 4. GN20-E5 GDDR6 Recommended Memories

Memory Density	Vendor	Manufacture Part Number	Die Revision	Strap	Memory Speed Grade	Date Code Alert	Qual. Plan	Status	Supported GPU Memory
8Gb	Samsung	K4280325BC-HC14	C-die	0x0	14 Gbps	2021	Full	Production ready	Q3 or later
8Gb	Hynix	H56C8H24A1R-S2C	A-die	0x2	14 Gbps	2021	Full	Production ready	Q3 or later
8Gb	Micron	MT61K256M32JE-14:A	A-die	0x1	14 Gbps	2021	Full	Production ready	Q3 or later

Table 2. GN20-E7 GDDR6 Recommended Memories

Memory Density	Vendor	Manufacture Part Number	Die Revision	Strap	Memory Speed Grade	Date Code Alert	Qual. Plan	Status	Supported GPU Memory
8Gb	Samsung	K4280325BC-HC14	C-die	0x0	14 Gbps	2021	Full	Production ready	Q3 or later
8Gb	Hynix	H56C8H24A1R-S2C	A-die	0x2	14 Gbps	2021	Full	Production ready	Q3 or later
8Gb	Micron	MT61K256M32JE-14:A	A-die	0x1	14 Gbps	2021	Full	Production ready	Q3 or later

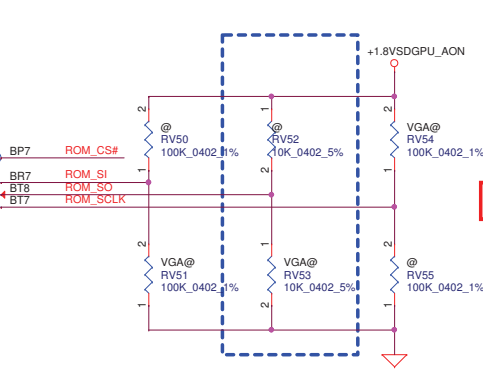
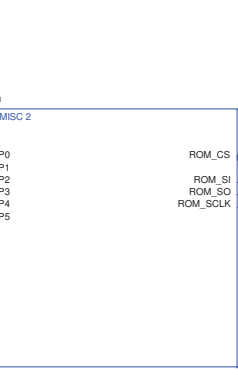
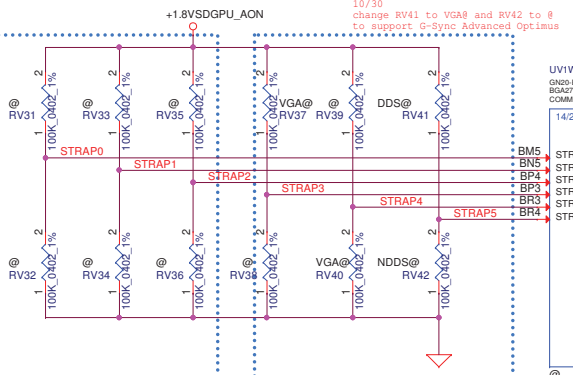


Table 9.4 FS_OVERT* Strap Enablement

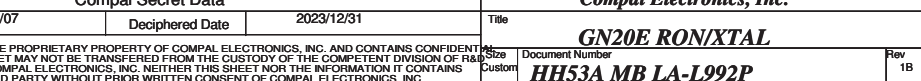
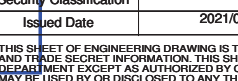
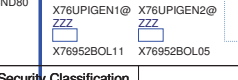
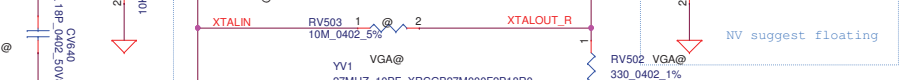
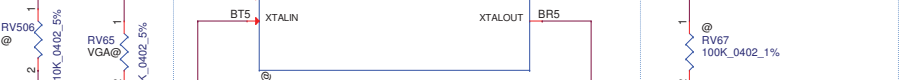
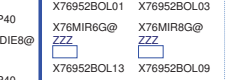
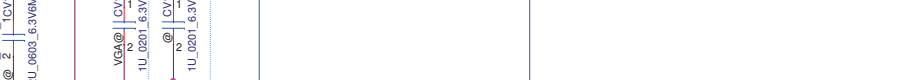
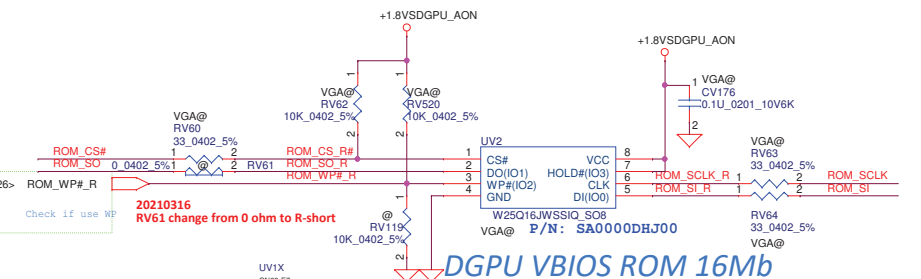
Strap Pins	see Note 1	FS_OVERT* Function
ROM_SO	ROM_SI	ROM_SCLK
L	L	H
all other configurations		

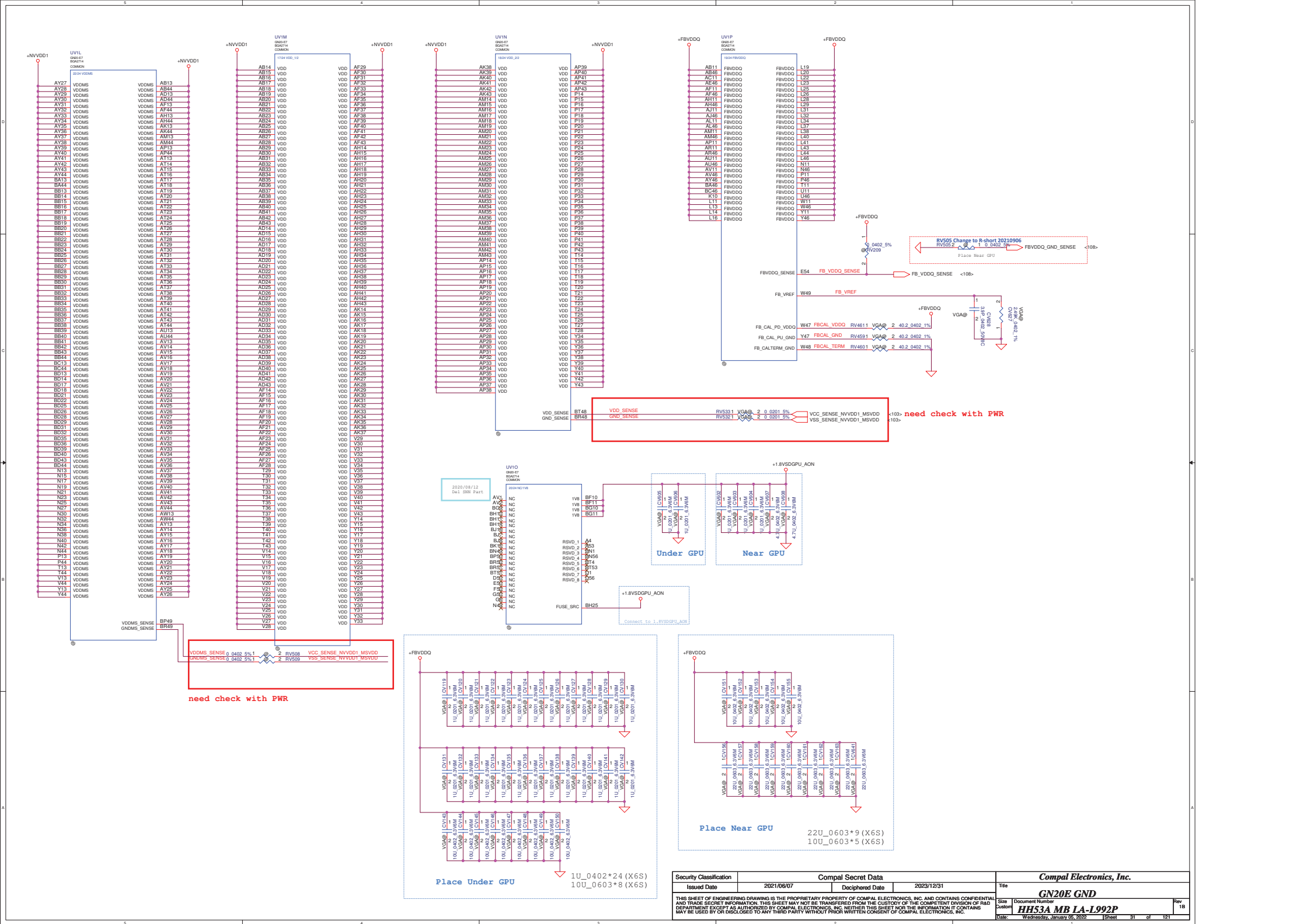
Note 2: The ROM_SO pin should be pulled low using a 10 kΩ resistor instead of a 100 kΩ resistor.

The Strap for ROM_SO should be 10K while all others are 100K.- check list check NV only PD need change to 10K?? - DG

Strap Pins see Note

STRAP2	STRAP1	STRAP0	Use Memory RVL for memory configs corresponding to these numbers
L	L	L	0 (0x000)
L	L	H	1 (0x001)
L	H	L	2 (0x002)
L	H	H	3 (0x003)
H	L	L	4 (0x004)
H	L	H	5 (0x005)
H	H	L	6 (0x006)
H	H	H	7 (0x007)
L	M	M	8 (0x008)
L	M	H	9 (0x009)
L	M	L	10 (0x00A)
L	M	H	11 (0x00B)
M	L	L	12 (0x00C)
M	L	H	13 (0x00D)
M	L	L	14 (0x00E)
M	L	H	15 (0x00F)





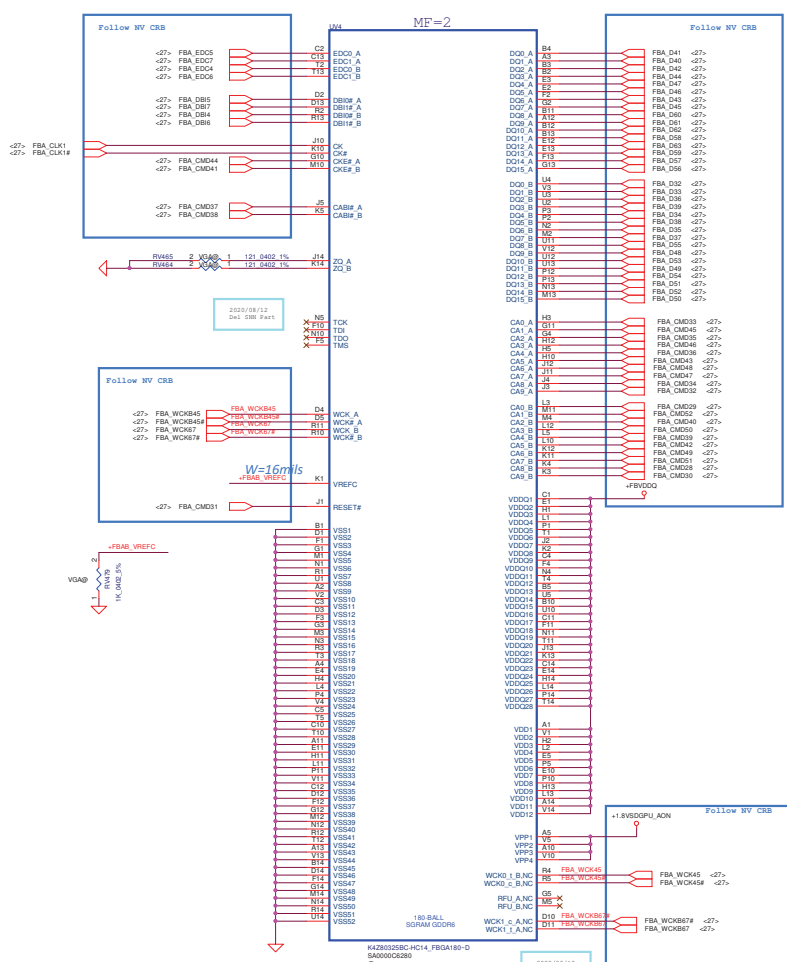
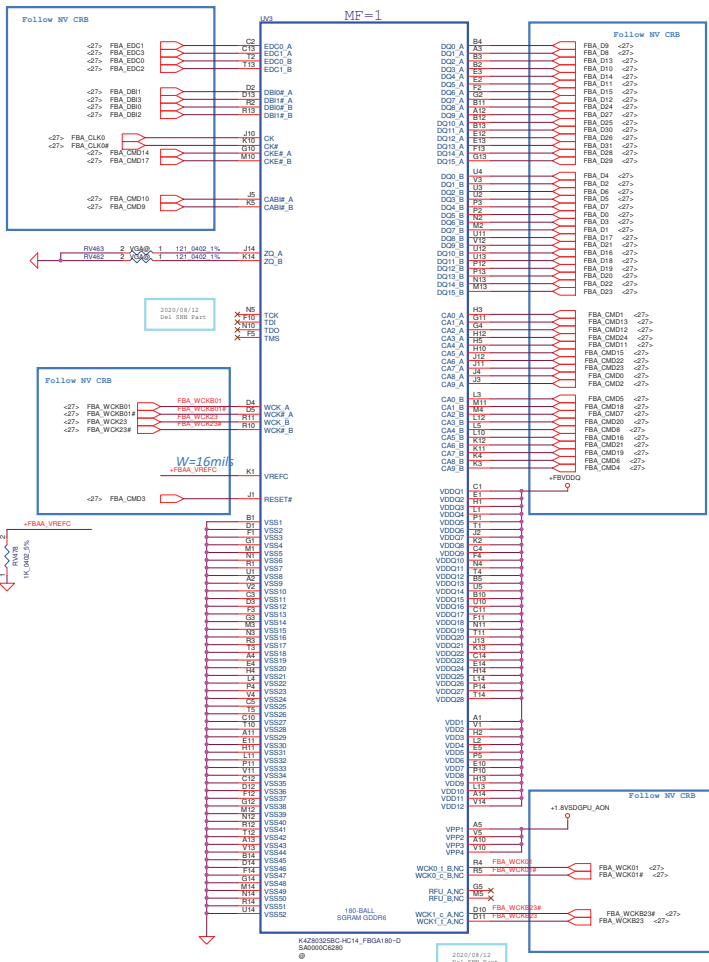


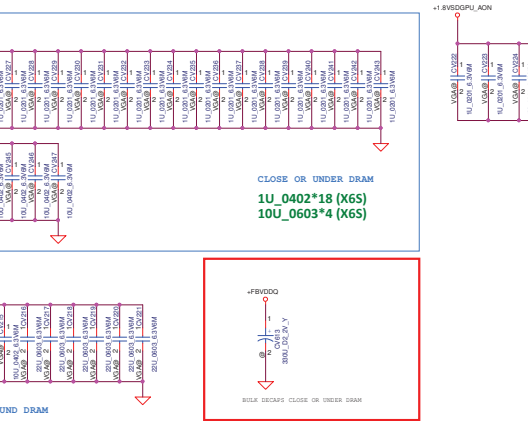
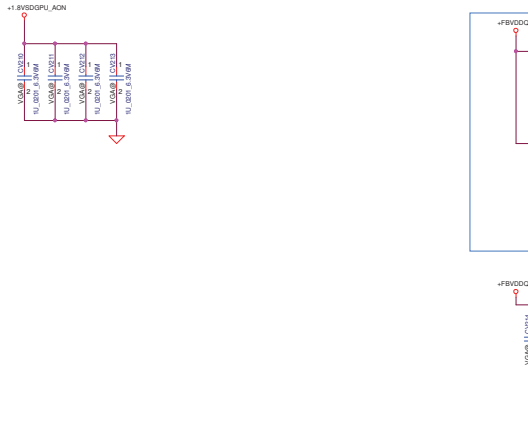
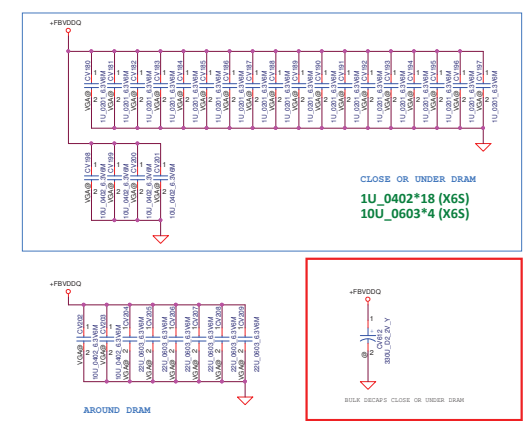
Table 6.4 GDDR6 Mode 3 Mapping, GB5-256

GB5-256	GPU FB Channel 0 [Data Bits (31:0)] [Bytes 0.1,2,3] ¹	GB5-256	GPU FB Channel 1 [Data Bits (63:32)] [Bytes 4,5,6,7] ¹
FbxCMD0	Bytes 0.1, CA0_A	FbxCMD8	Bytes 4.5, CA0_B
FbxCMD1	Bytes 0.1, CA0_A	FbxCMD9	Bytes 4.5, CA0_B
FbxCMD2	Bytes 0.1, CA0_A	FbxCMD10	Bytes 4.5, CA0_B
FbxCMD3	Bytes 0.3, RS1*	FbxCMD11	Bytes 4.7, RS1*

Table 6.4 GDDR6 Mode 3 Mapping, GB5-256 (Continued)

GB5-256	GPU FB Channel 0 [Data Bits (31:0)] [Bytes 0.1,2,3] ¹	GB5-256	GPU FB Channel 1 [Data Bits (63:32)] [Bytes 4,5,6,7] ¹
FbxCMD4	Bytes 0.1, CA0_A	FbxCMD12	Bytes 4.5, CA0_B
FbxCMD5	Bytes 0.1, CA0_A	FbxCMD13	Bytes 4.5, CA0_B
FbxCMD6	Bytes 0.1, CA0_A	FbxCMD14	Bytes 4.5, CA0_B
FbxCMD7	Bytes 0.1, CA0_A	FbxCMD15	Bytes 4.5, CA0_B
FbxCMD8	Bytes 0.1, CA0_A	FbxCMD16	Bytes 4.5, CA0_B
FbxCMD9	Bytes 0.1, CA0_A	FbxCMD17	Bytes 4.5, CA0_B
FbxCMD10	Bytes 0.1, CA0_A	FbxCMD18	Bytes 4.5, CA0_B
FbxCMD11	Bytes 0.1, CA0_A	FbxCMD19	Bytes 4.5, CA0_B
FbxCMD12	Bytes 0.1, CA0_A	FbxCMD20	Bytes 4.5, CA0_B
FbxCMD13	Bytes 0.1, CA0_A	FbxCMD21	Bytes 4.5, CA0_B
FbxCMD14	Bytes 0.1, CA0_A		
FbxCMD15	Bytes 0.1, CA0_A		
FbxCMD16	Bytes 0.1, CA0_A		
FbxCMD17	Bytes 0.1, CA0_A		
FbxCMD18	Bytes 0.1, CA0_A		
FbxCMD19	Bytes 0.1, CA0_A		
FbxCMD20	Bytes 0.1, CA0_A		
FbxCMD21	Bytes 0.1, CA0_A		

Note:
1. GPU debug pins; not connected to DRAM.
2. Bytes 0.1 correspond to DRAM Channel A, Bytes 2.3 correspond to DRAM Channel B.
3. Bytes 4.5 correspond to DRAM Channel A, Bytes 6.7 correspond to DRAM Channel B.



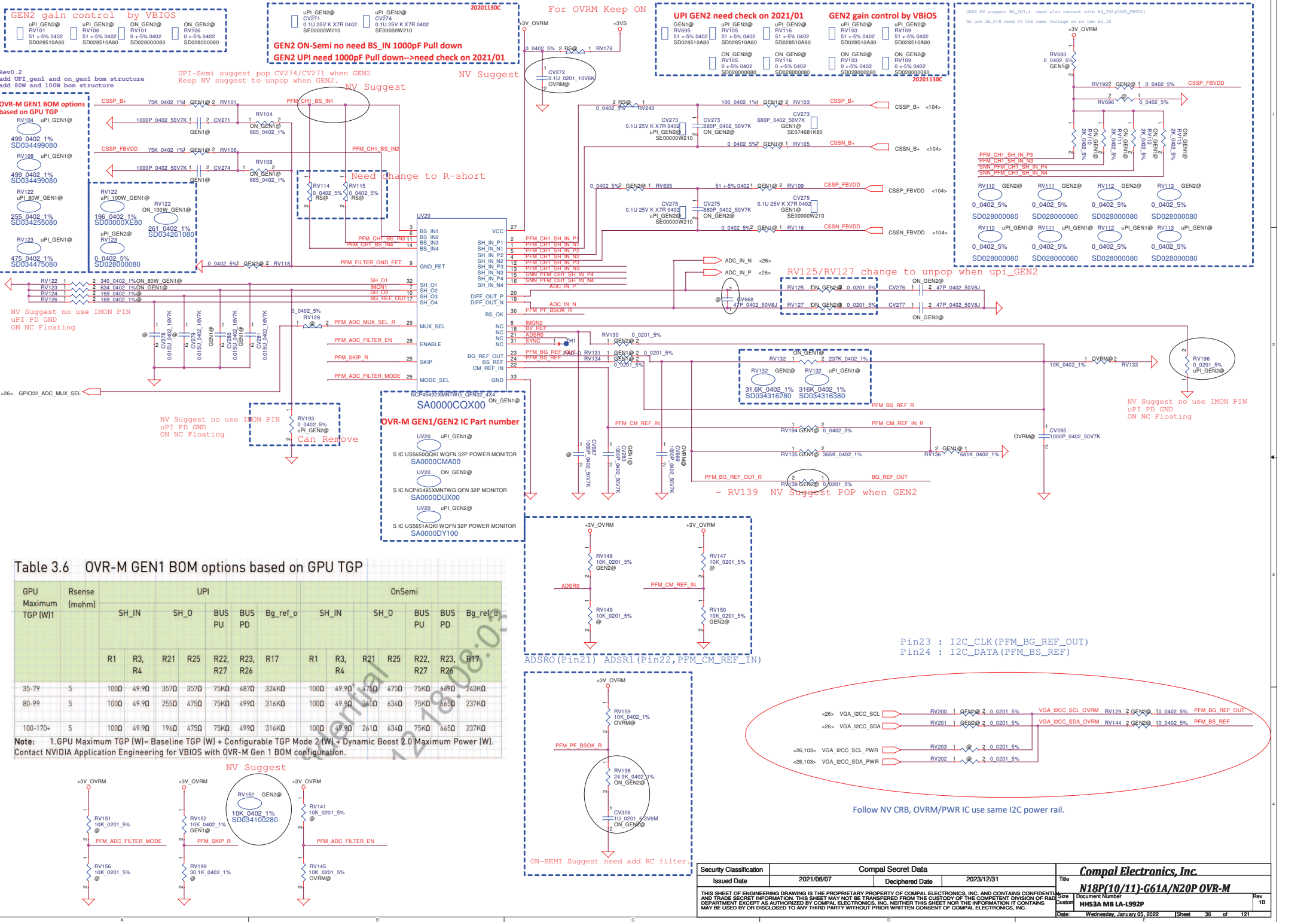
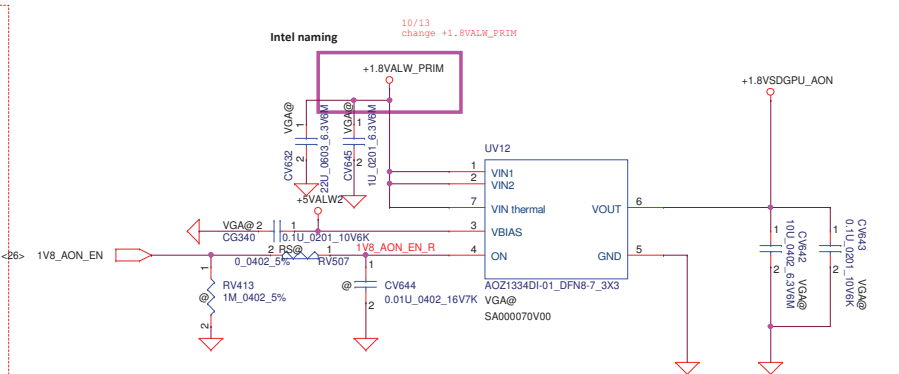
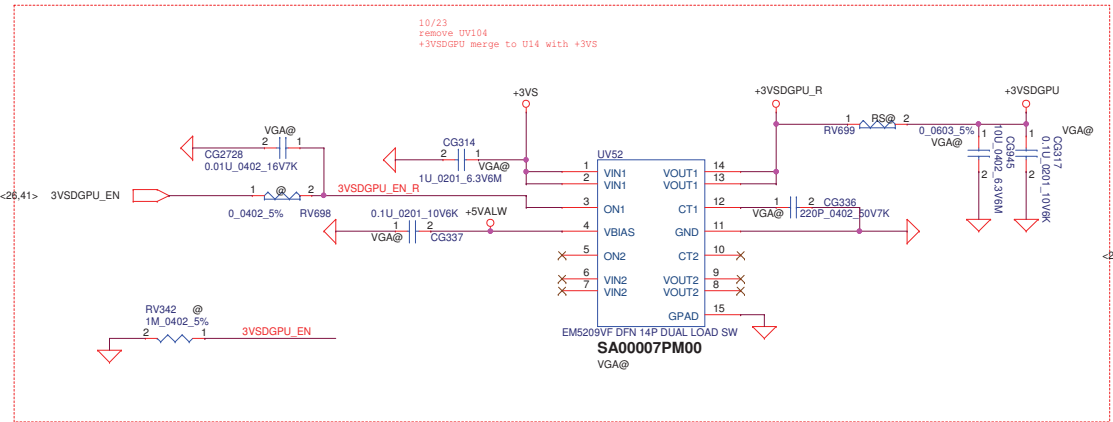


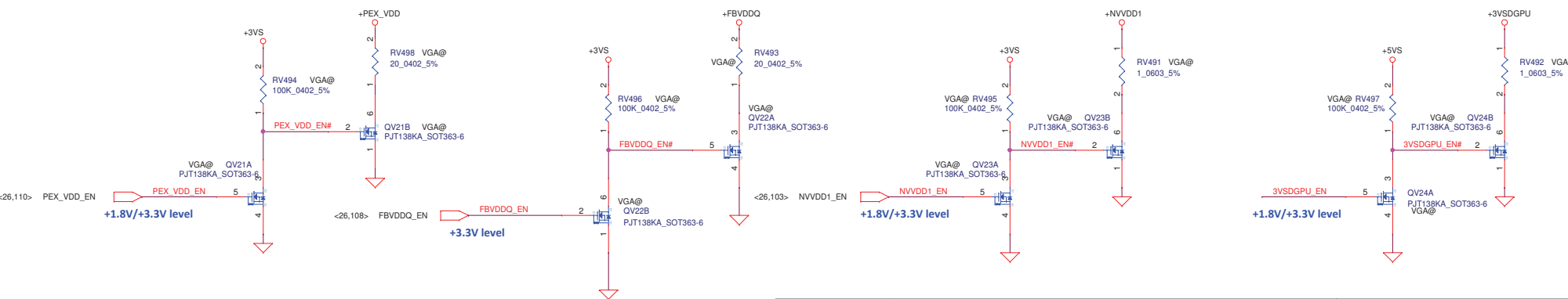
Table 3.6 OVR-M GEN1 BOM options based on GPU TGP

GPU Maximum TGP (W)	Rsense (mohm)	UPI										OnSemi						
		SH_IN		SH_O	BUS PU		BUS PD	Bg_ref_o	SH_IN	SH_O	BUS PU	BUS PD	Bg_ref_o	SH_IN	SH_O	BUS PU	BUS PD	Bg_ref_o
		R1	R3, R4	R21	R25	R22, R27	R23, R26	R17	R1	R3, R4	R21	R25	R22, R27	R23, R26	R17	R1	R3, R4	R21
35-79	5	100K	49.9K	357K	357K	75K	487K	324K	100K	49.9K	475K	475K	75K	649K	243K	75K	649K	243K
80-99	5	100K	49.9K	255K	475K	75K	499K	316K	100K	49.9K	340K	634K	75K	665K	237K	75K	665K	237K
100-170+	5	100K	49.9K	196K	475K	75K	499K	316K	100K	49.9K	261K	634K	75K	665K	237K	75K	665K	237K

Note: 1. GPU Maximum TGP (W) = Baseline TGP (W) + Configurable TGP Mode 2 (W) + Dynamic Boost 2.0 Maximum Power (W). Contact NVIDIA Application Engineering for VBIOS with OVR-M Gen 1 BOM configuration.

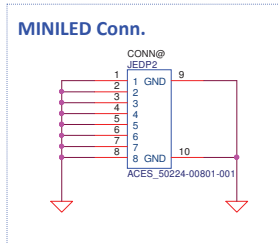
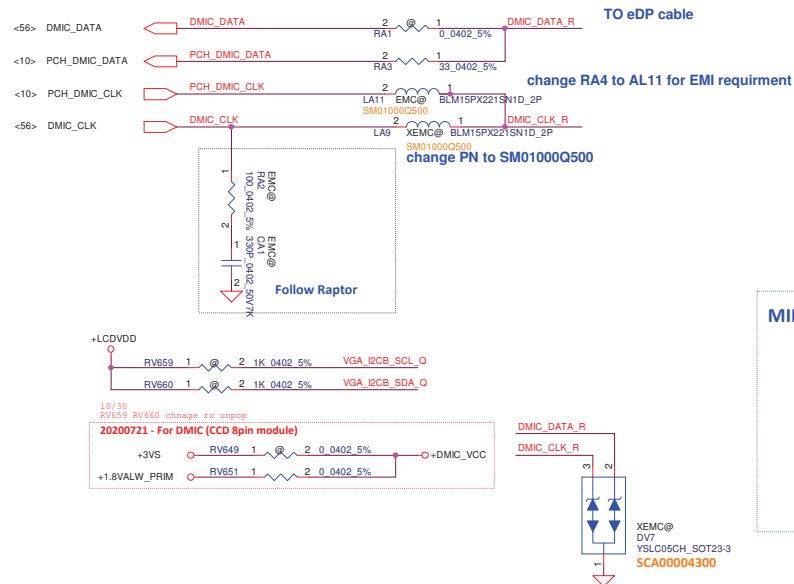
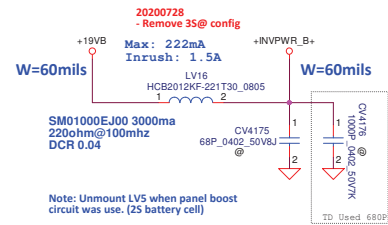
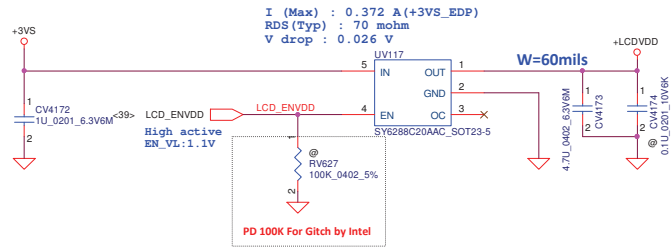


For Power down sequence

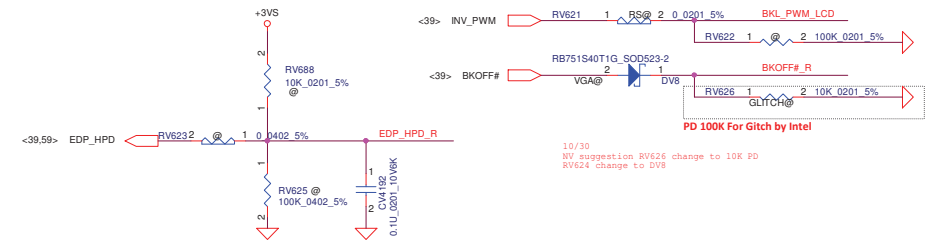


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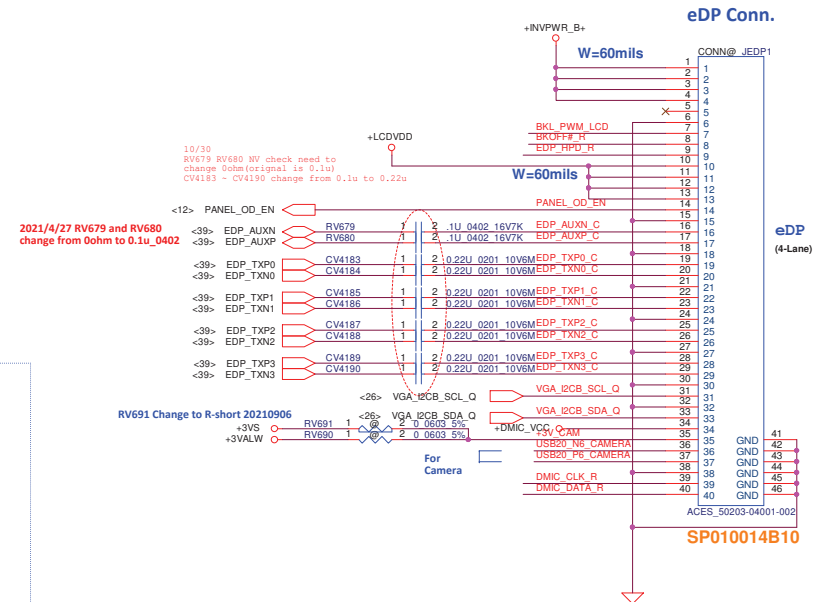
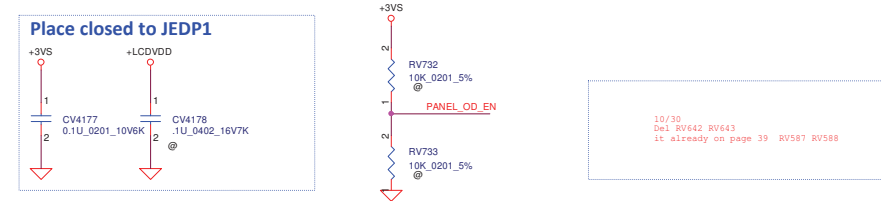
LCD POWER CIRCUIT



LCD enable signal

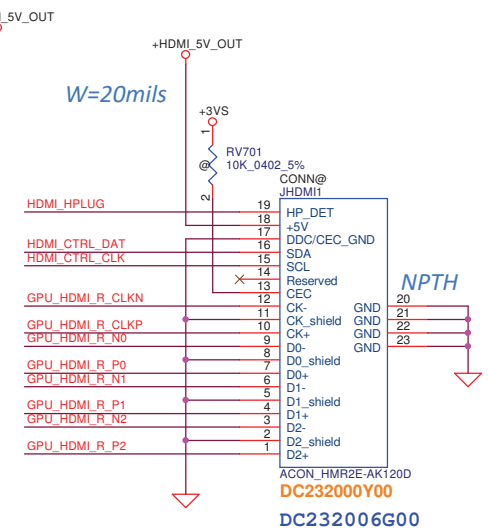


Camera



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				Date: Wednesday, January 05, 2022 Sheet 38 of 121			


```
Reservel for HDMI2.0
HDMI2.0 Rs=6.04 ohm(By Test)
HDMI2.1 use 0ohm(Default Use)
```



2

QX1
L2N7002WT1G_SC-70-3
SB000009Q80

3

1.8VSDGPU_AON

2

2.2K_0402_5%

1

2

2.2K_0402_5%

1

1.8VSDGPU_AON

4

5

3

OVH21A
PJT138KA_SOT363-6

1

2

2K_0402_1%

1

2K_0402_1%

+HDMI_5V_OUT

<29> GPU_HDMI_CTRL_CLK GPU_HDMI_CTRL_CLK HDMI_CTRL_CLK

<29> GPU_HDMI_CTRL_DAT GPU_HDMI_CTRL_DAT HDMI_CTRL_DAT

30hm/10pF

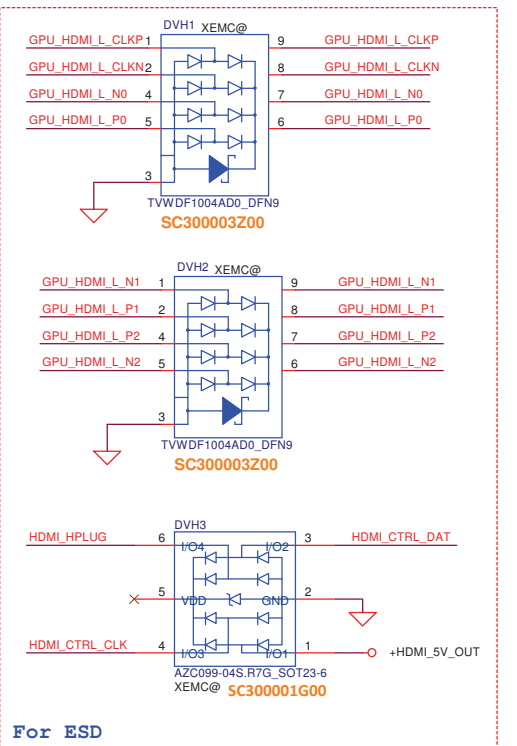
QVH21B

1

2

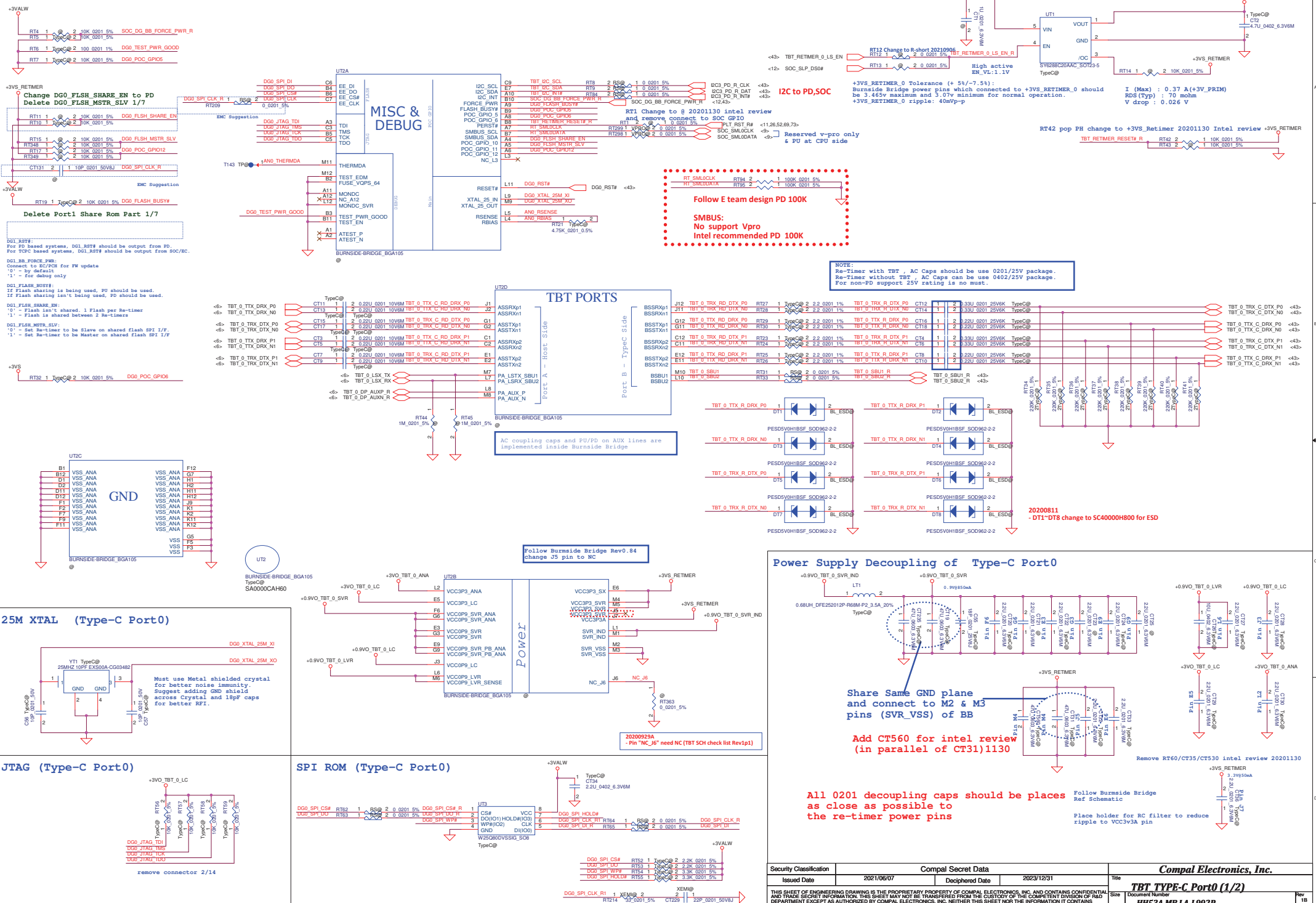
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PJT138KA SOT363-6

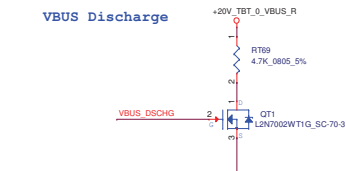


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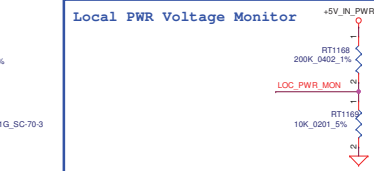
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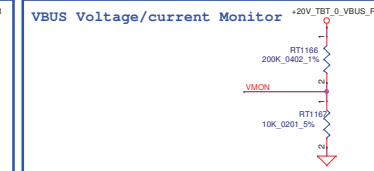
VBUS Discharge



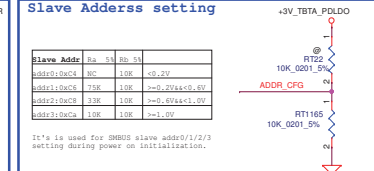
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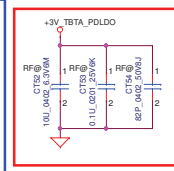
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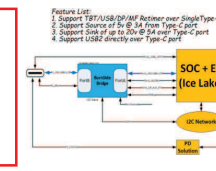
Slave Address setting



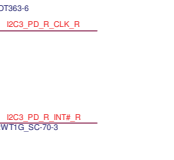
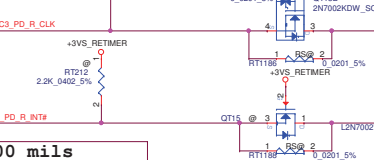
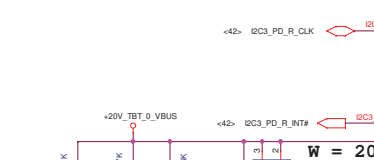
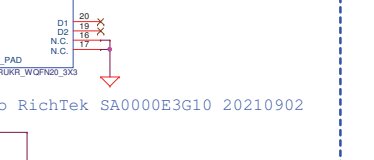
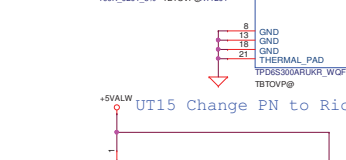
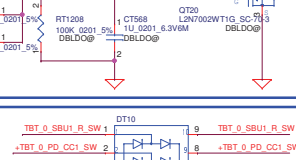
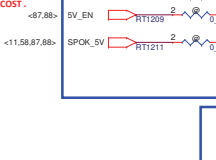
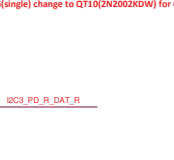
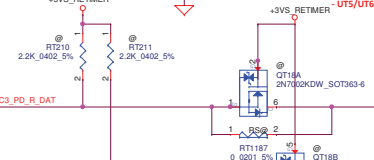
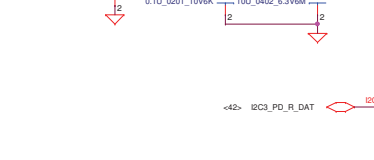
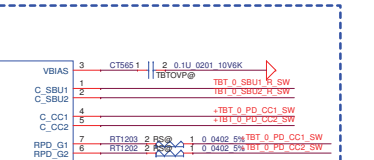
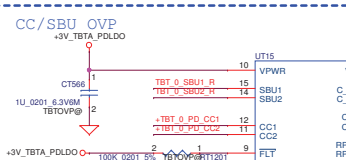
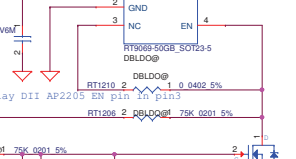
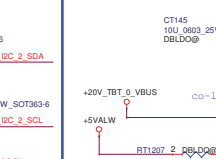
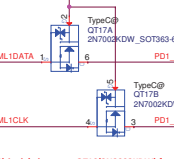
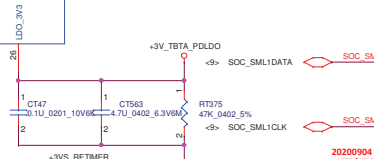
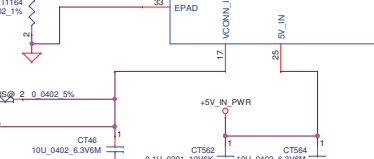
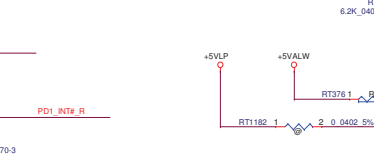
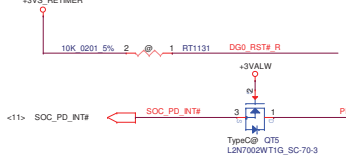
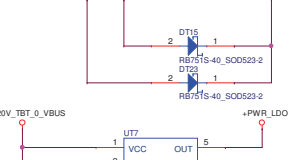
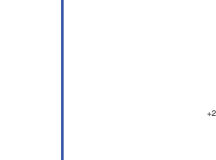
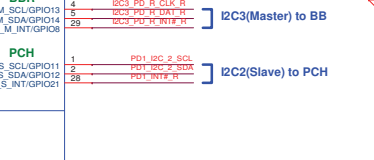
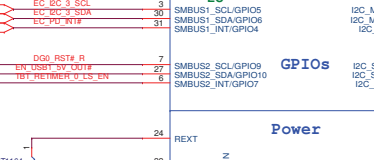
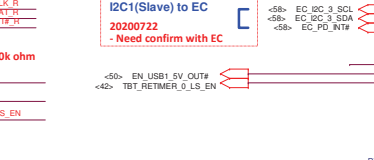
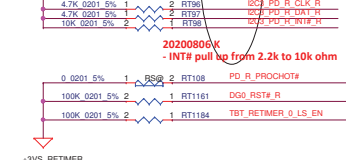
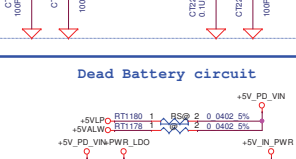
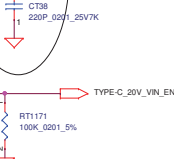
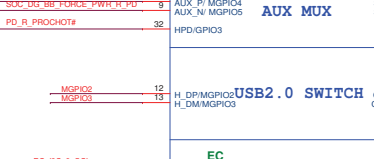
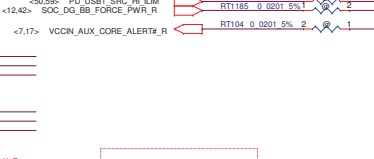
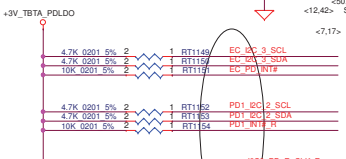
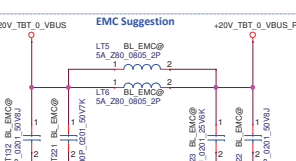
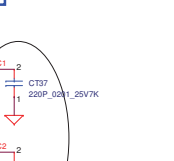
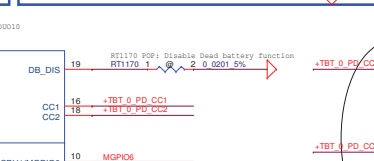
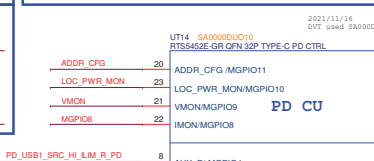
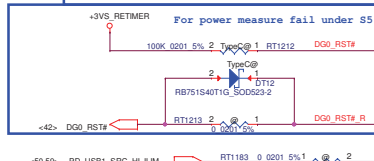
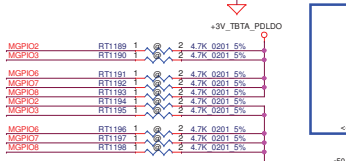
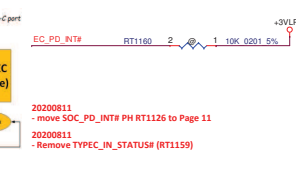
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Feature List:



EC_PD_NTW



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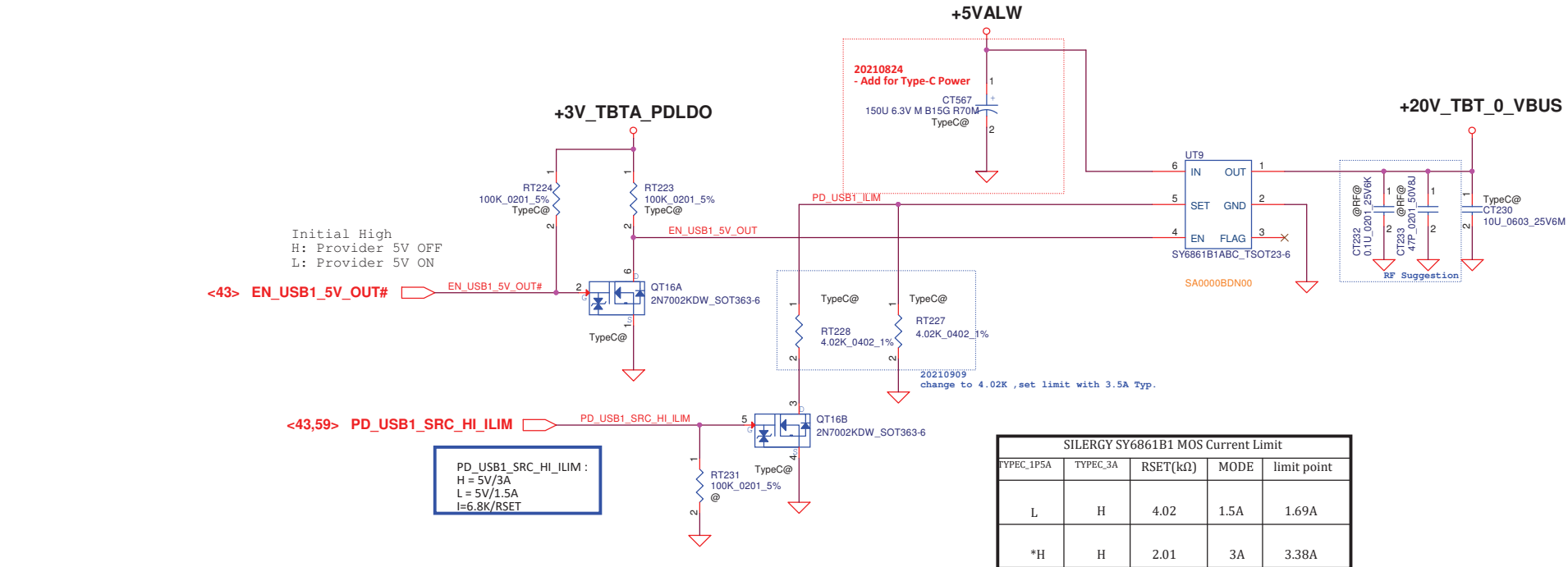
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				Date:	Wednesday, January 05, 2022
				Sheet	49 of 121
				Rev	1B
				Document Number	HH53A MB LA-L992P

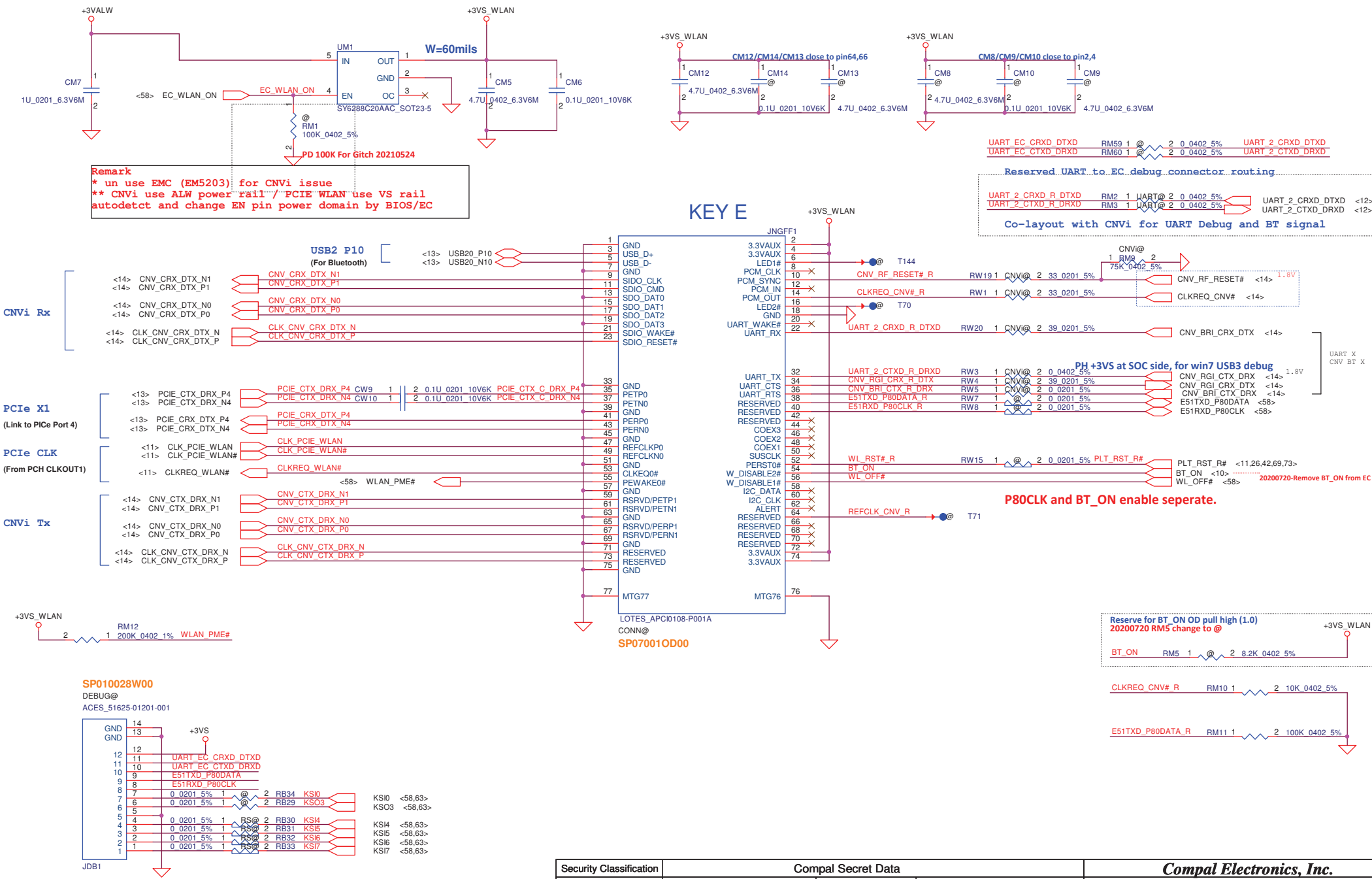
MB_USB3.1 TypeC Conn. (Power Path)
- For Realtek 5452E



Reserve Page

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NGFF Wireless LAN / BT (Key E) [PCIE+USB/CNVi]



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Issued Date	2021/06/07	Deciphered Date	2023/12/31	Title	NGFF WL(KEY E) / WWAN(KRY B)
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				Date:	Wednesday, January 05, 2022
				Sheet	53 of 121
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				HH53A MB LA-L992P	

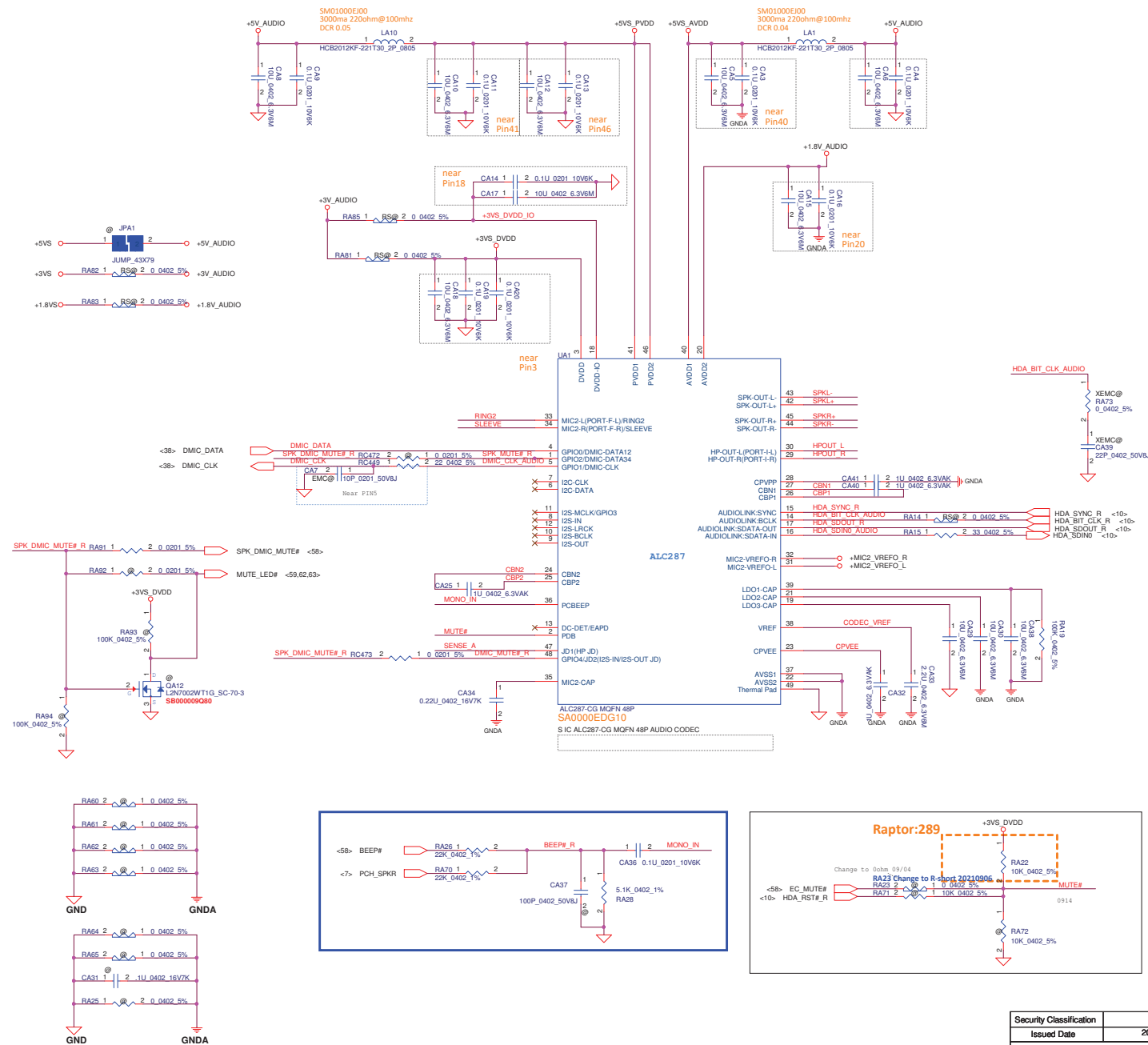
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				HH53A MB LA-L992P	
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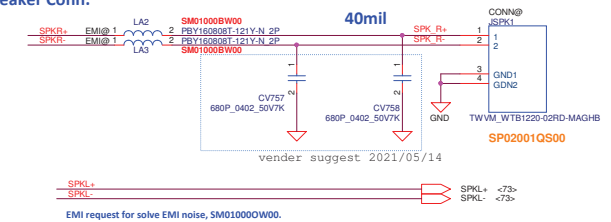
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Issued Date	2021/06/07	Deciphered Date	2023/12/31	Title	Reserve
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				Date:	Wednesday, January 05, 2022
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HD Audio Codec

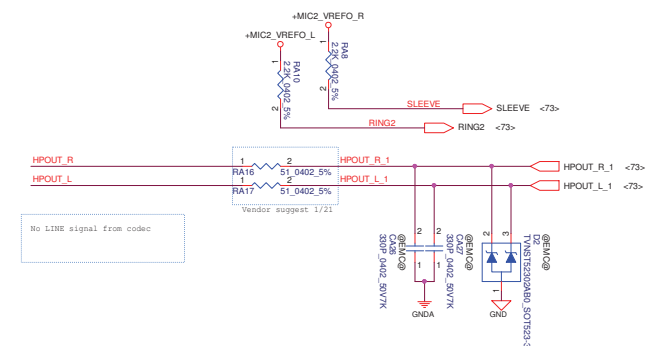


Int. Speaker Conn.

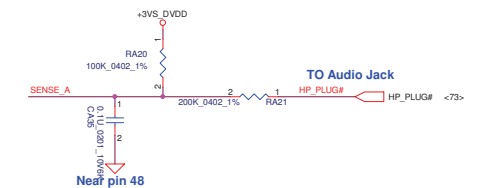
Reserve for EMI



Headphone Out



JACK Detect

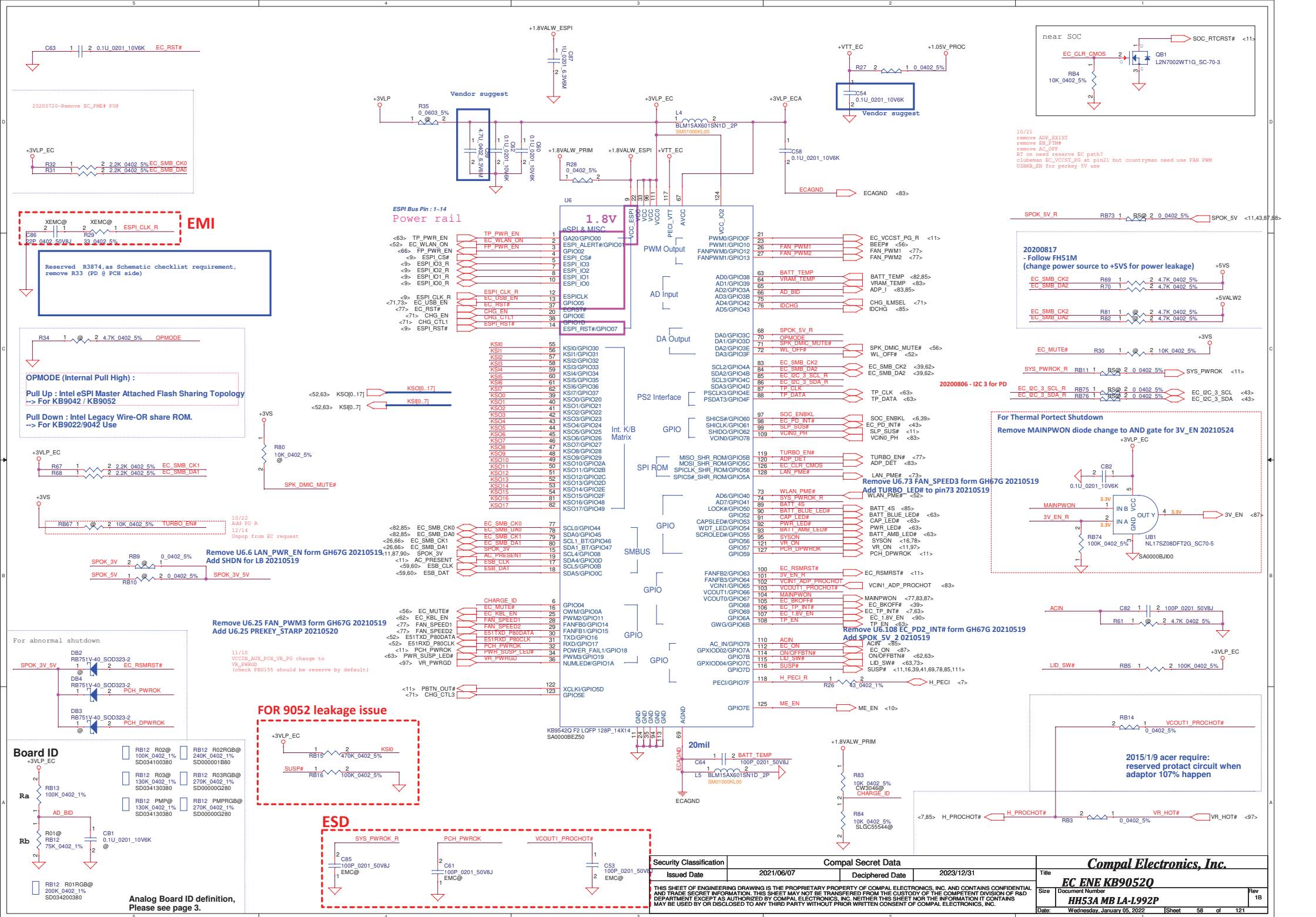


JD1	
HP-JD	LINE1-JD
200K	100K

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Date:	Wednesday, January 05, 2022	Sheet	56	of	121

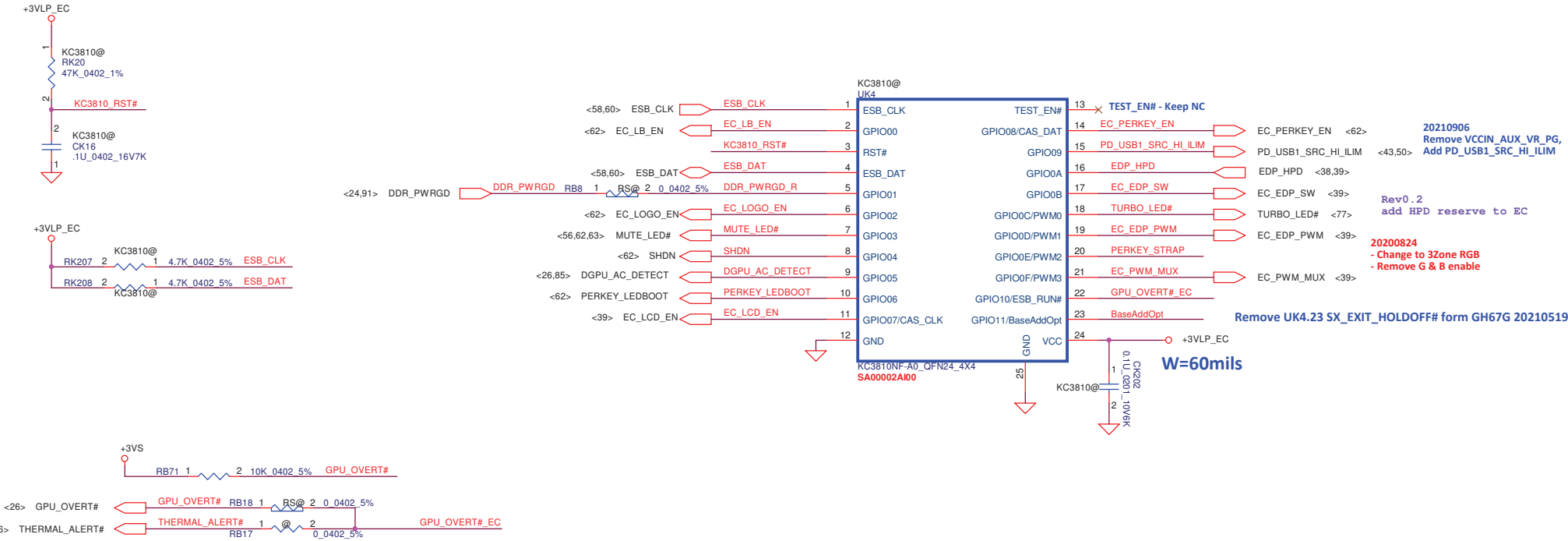
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				HH53A MB LA-L992P	1B
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OMEN New ESB CLK&DAT for Extend I/O

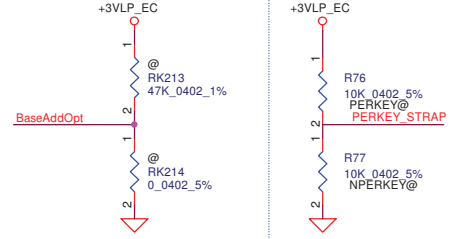
*NMI_DBG#: is a debug pin for EC to
infrom BIOS after press hot key.



Need EC confirm

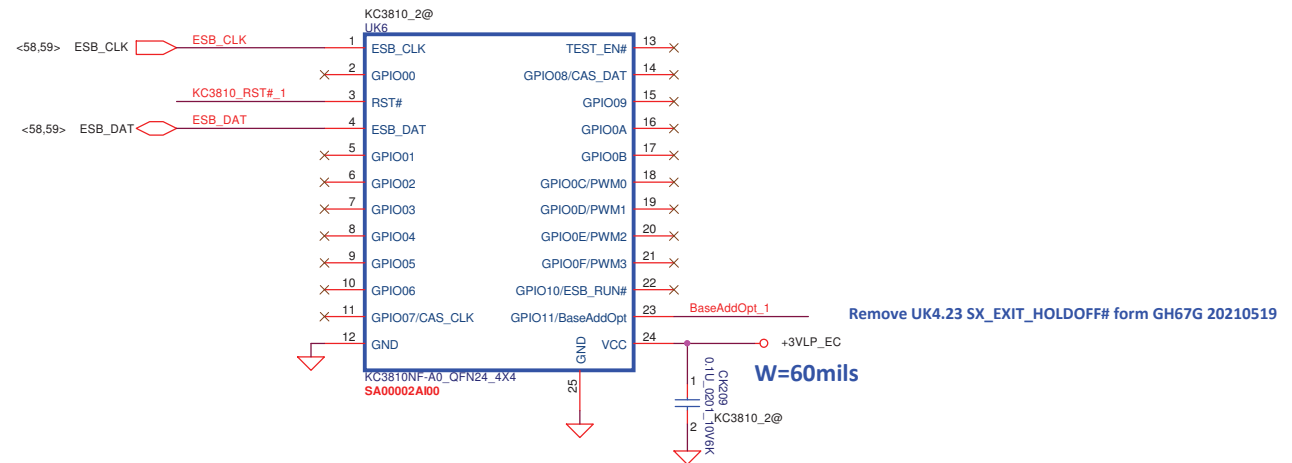
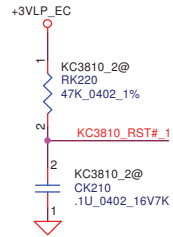
[GPIO11/BaseAddOpt]
If support second 3810,
please let one 3810 GPIO11 connect GND and
the other keep NC or initial High

- High/NC: USR_EGPIOBaseSetting - 0x00
- Low: USR_EGPIOBaseSetting - 0x08



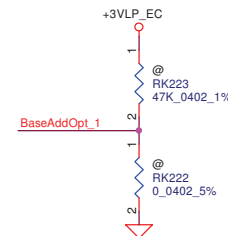
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*NMI_DBG#: is a debug pin for EC to inform BIOS after press hot key.



[GPIO11/BaseAddOpt]
If support second 3810,
please let one 3810 GPIO11 connect GND and
the other keep NC or initial High

- High/NC: USR_EGPIOBaseSetting - 0x00
- Low: USR_EGPIOBaseSetting - 0x08

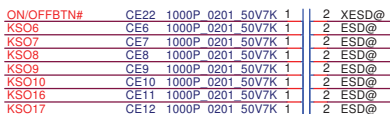


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					Size	Document Number		Rev
					HH53A MB LA-1992P			1B
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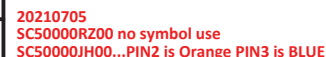
Reserve Page

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
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ON/OFF BTN



Hall sensor



20210909
Change BLUE to 3K from ME

20211116
Change RG4/RG11 to 2.2K from ME

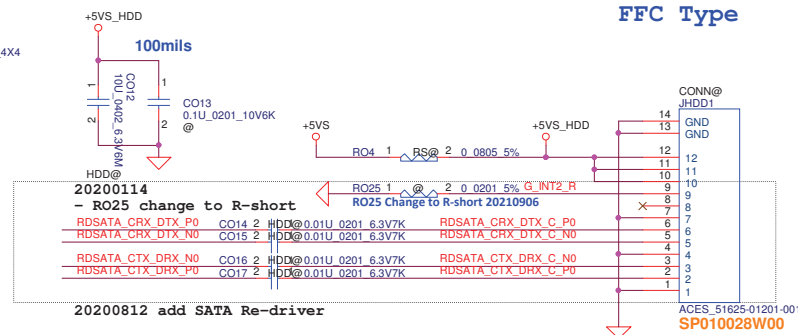
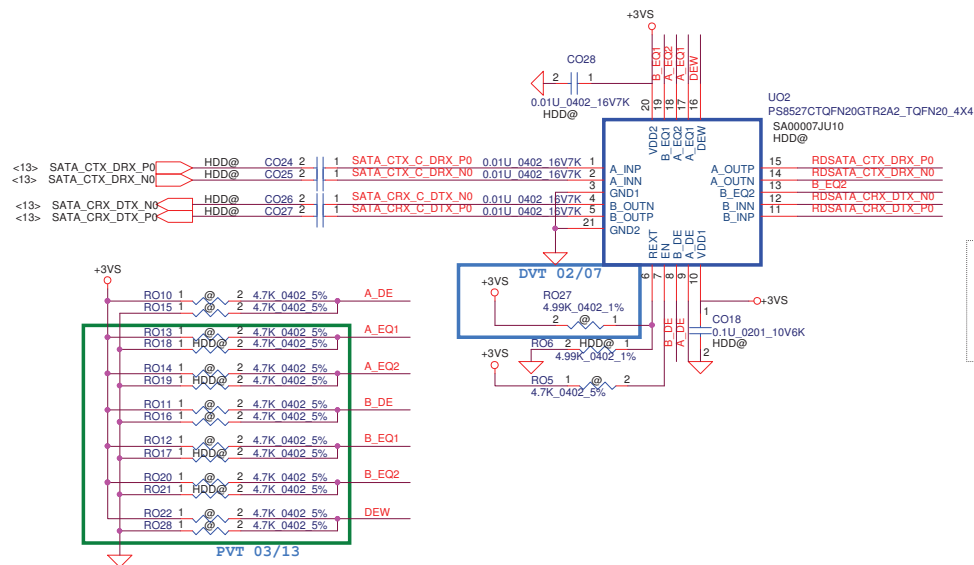
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Issued Date	2021/06/07	Deciphered Date	2023/12/31	Title		
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				Size	Document Number	Rev
				Custom	HH53A MB 1A-L992P	1E
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				Date:	Wednesday, January 05, 2022
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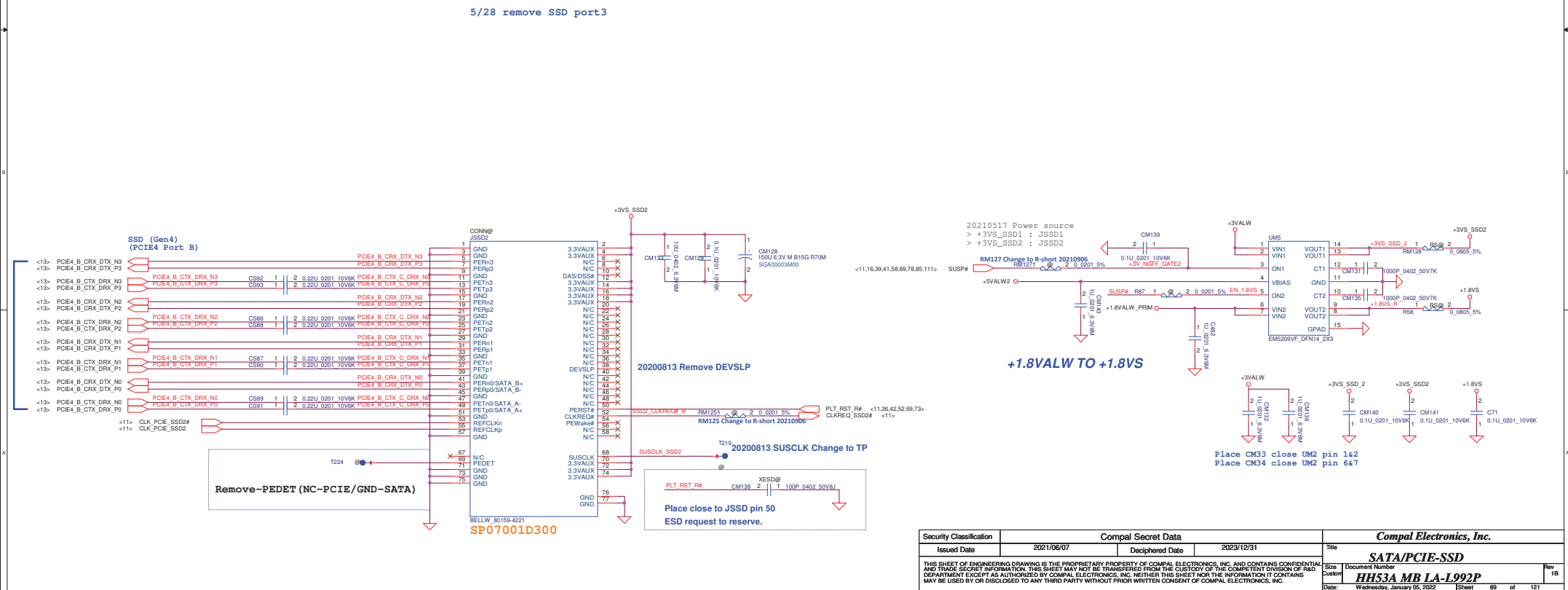
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				Date	Wednesday, January 05, 2022
				Sheet	68 of 121

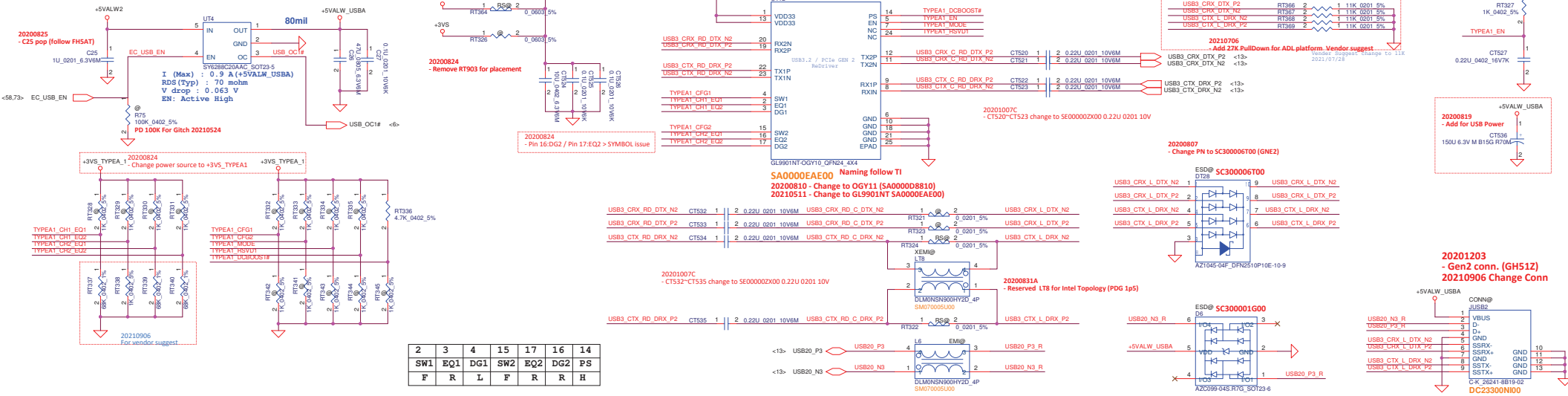


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			Date	Yrdaymo, Jan 15, 2022
			Page	69 of 121

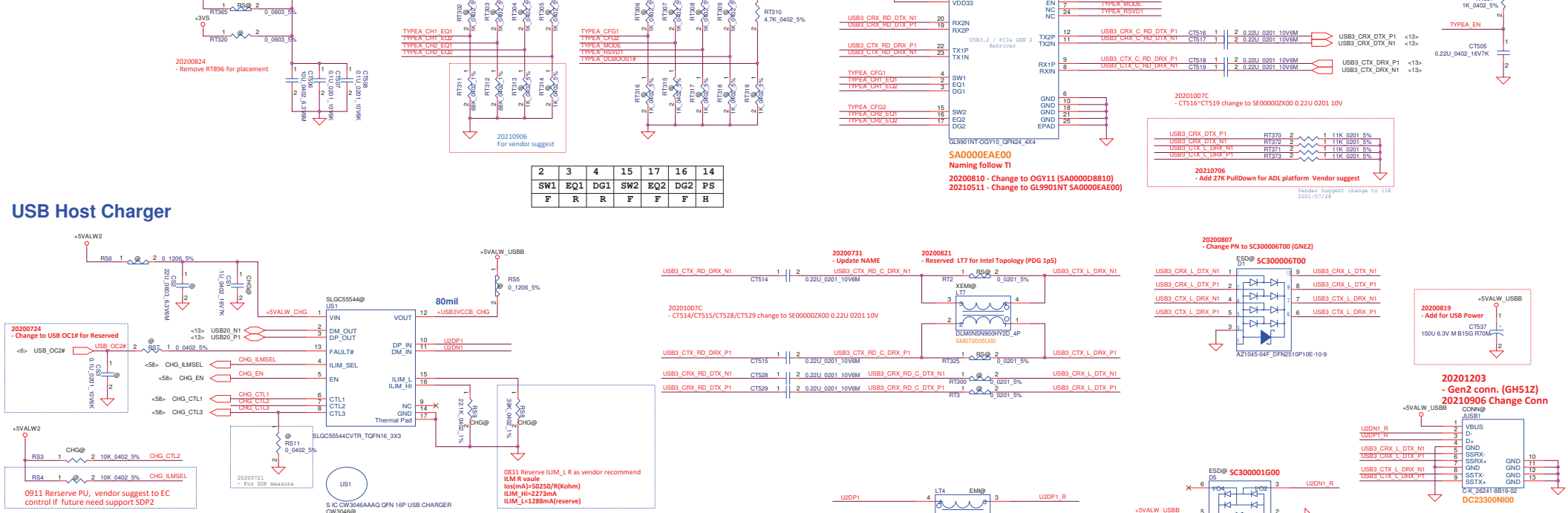
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MB_USB3 GEN2 Type-A Conn.



MB_USB3 GEN2(W Re-driver) Type-A Conn. (Charge Port)



USB Host Charger Truth Table

CHG_EN	CTL1	CTL2	CTL3	ILIM_SEL	MODE	Current Limit Setting	Note
0	0	1	0	1	SDP1-OFF	ILIM_H	Port power off
1	0	1	0	1	SDP1	ILIM_H	Data Lines Connected
1	0	1	1	1	DCP Auto	ILIM_H	Data Lines Disconnected
1	1	1	1	1	CDP	ILIM_H	Data Lines Connected

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				HH53A MB LA-L992P	
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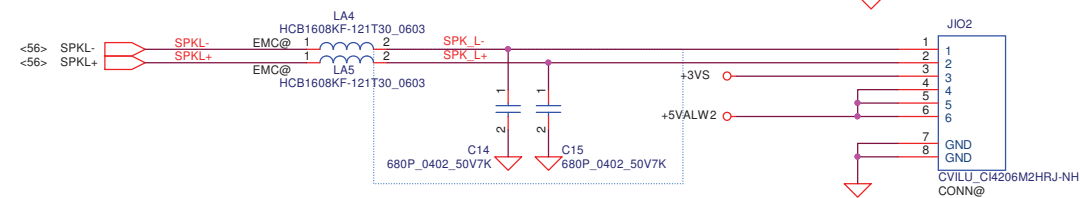
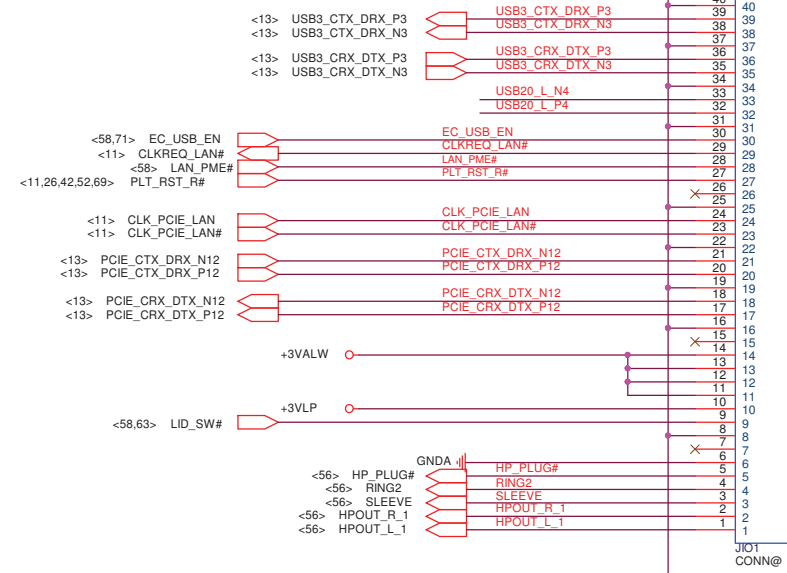
IO/B CONN



0702
- IO_B change pin define

Check IO FFC double pin location

SDAN_606044-040041



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Issued Date		Deciphered Date		Document Number	
2021/06/07		2023/12/31		HH53A MB LA-L992P	
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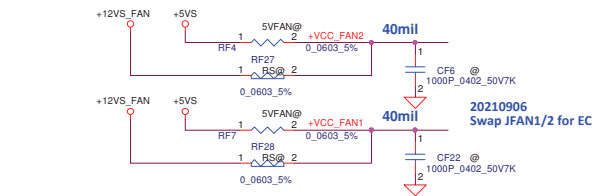
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				Date: Wednesday, January 05, 2022	Rev 1B
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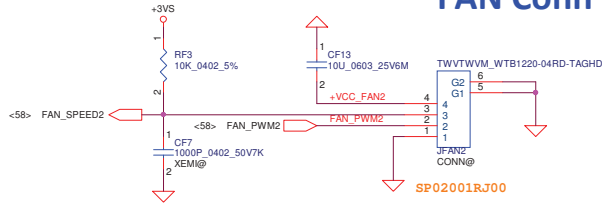
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Issued Date	2021/06/07	Deciphered Date	2023/12/31	Title	Reserve
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				HH53A MB LA-L992P	
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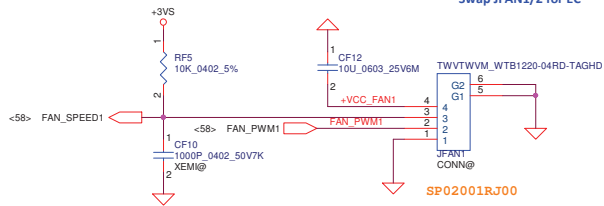
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
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FAN Conn

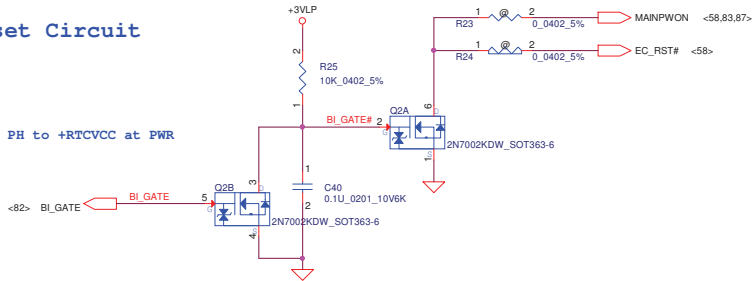


20210906
Swap JFAN1/2 for EC

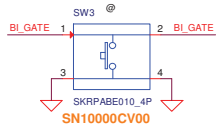


Reset Circuit

BI_GATE PH to +RTCVCC at PWR side

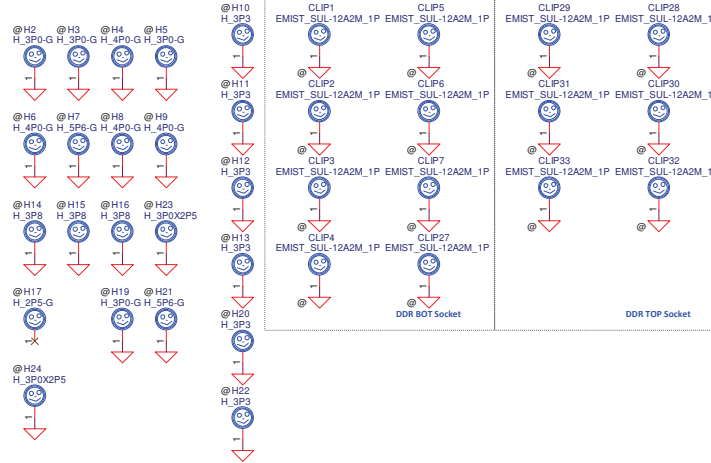


Reset Button

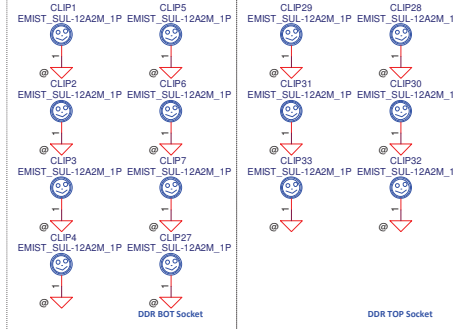


change PN to SN10000CV00

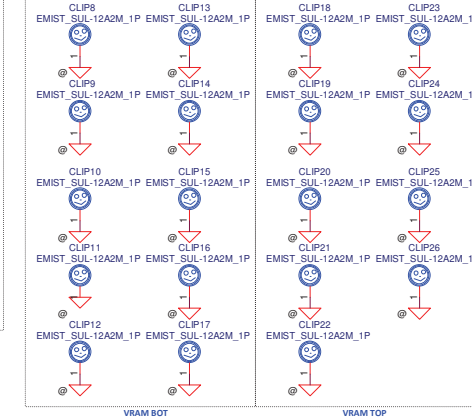
Screw Hole Stand Off



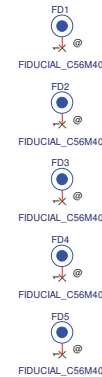
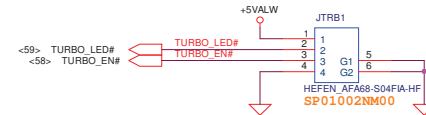
Clips



Clips



Turbo Key



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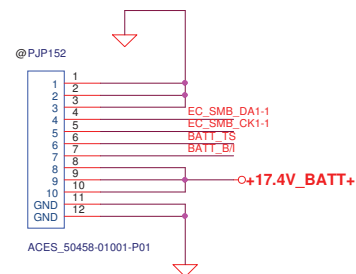
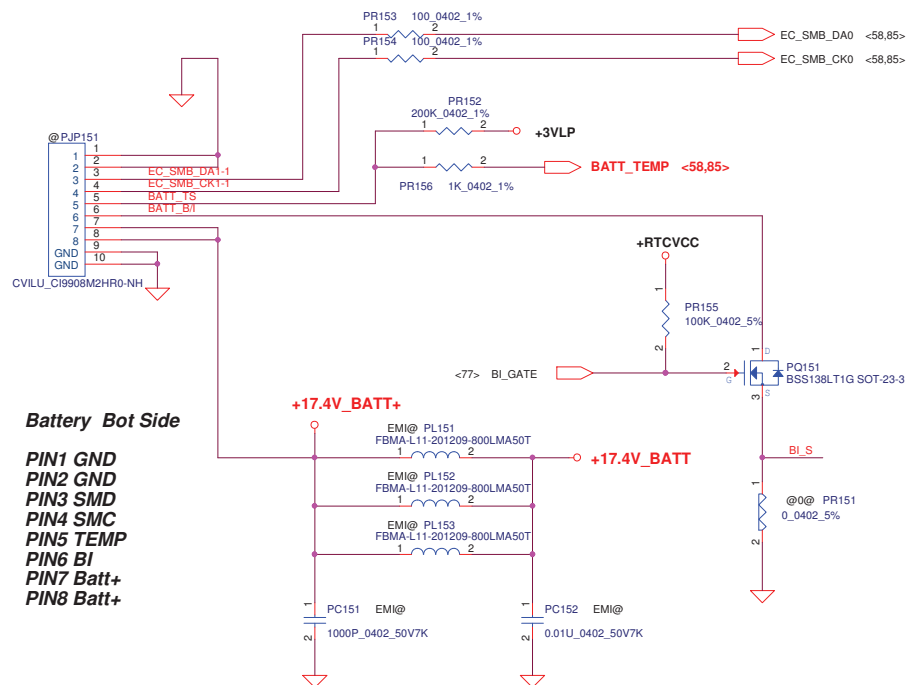
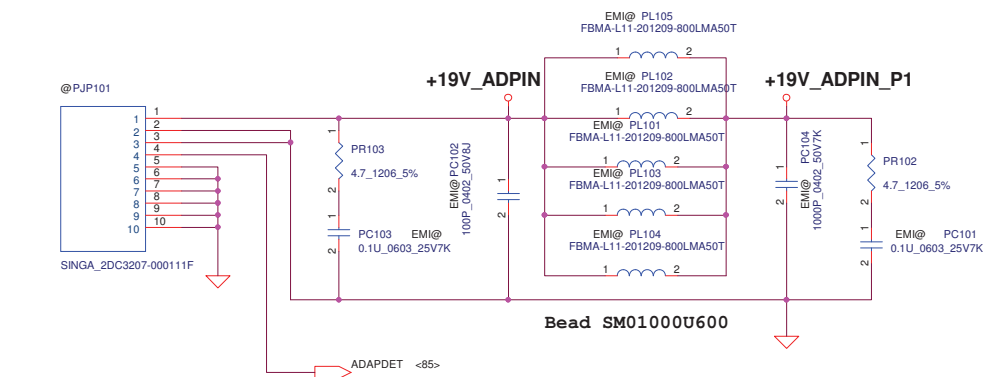
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2021/06/07	Deciphered Date	2023/12/31	Title	XDP/CMC/APS Debug Conn
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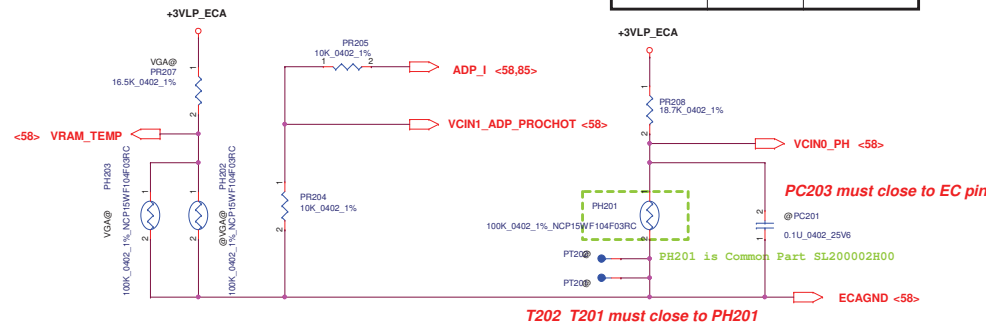
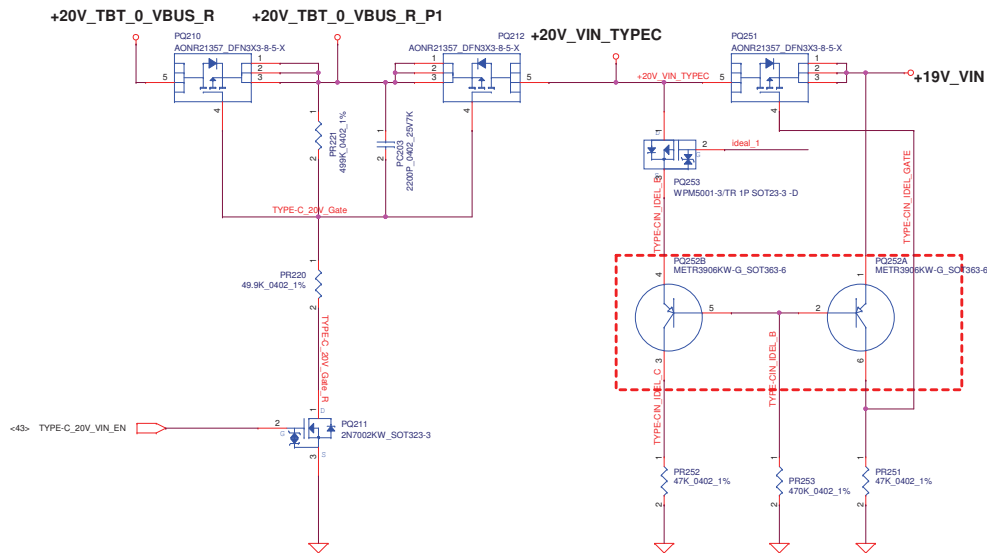
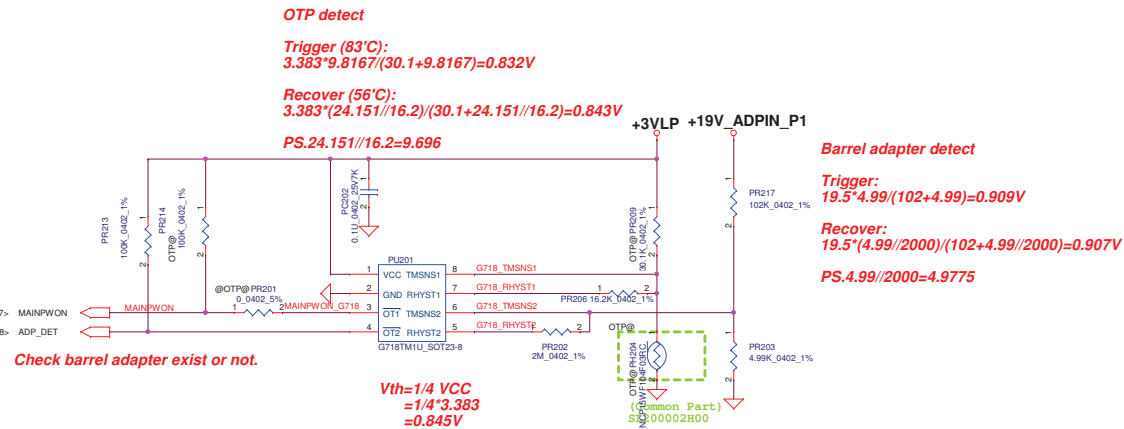
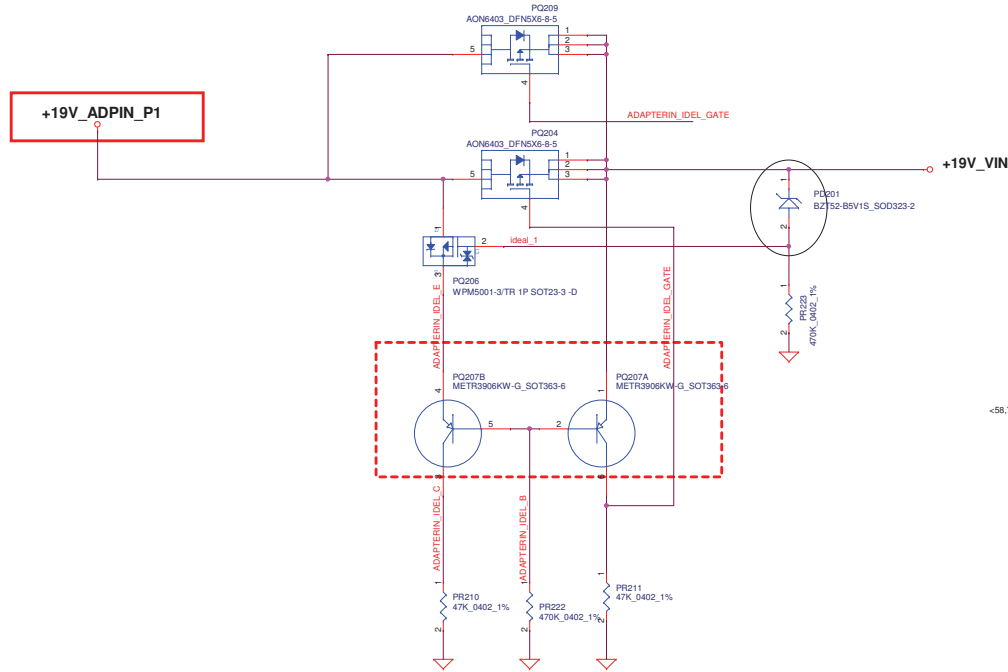
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Battery Bot Side

PIN1 GND
PIN2 GND
PIN3 SMD
PIN4 SMC
PIN5 TEMP
PIN6 BI
PIN7 Batt+
PIN8 Batt+

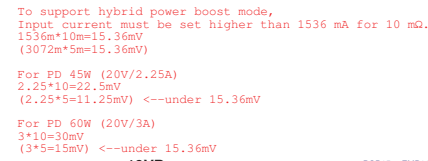
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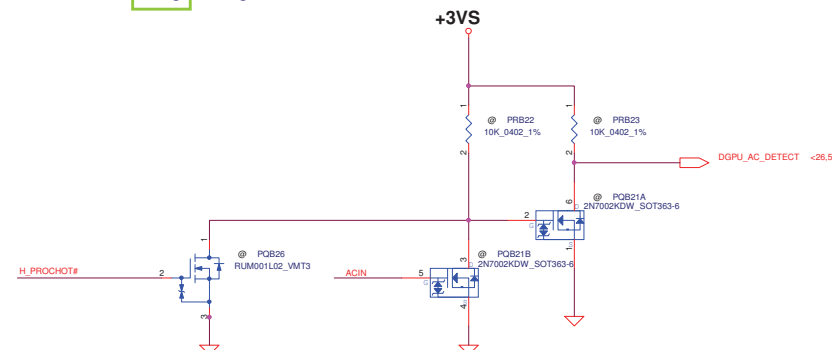
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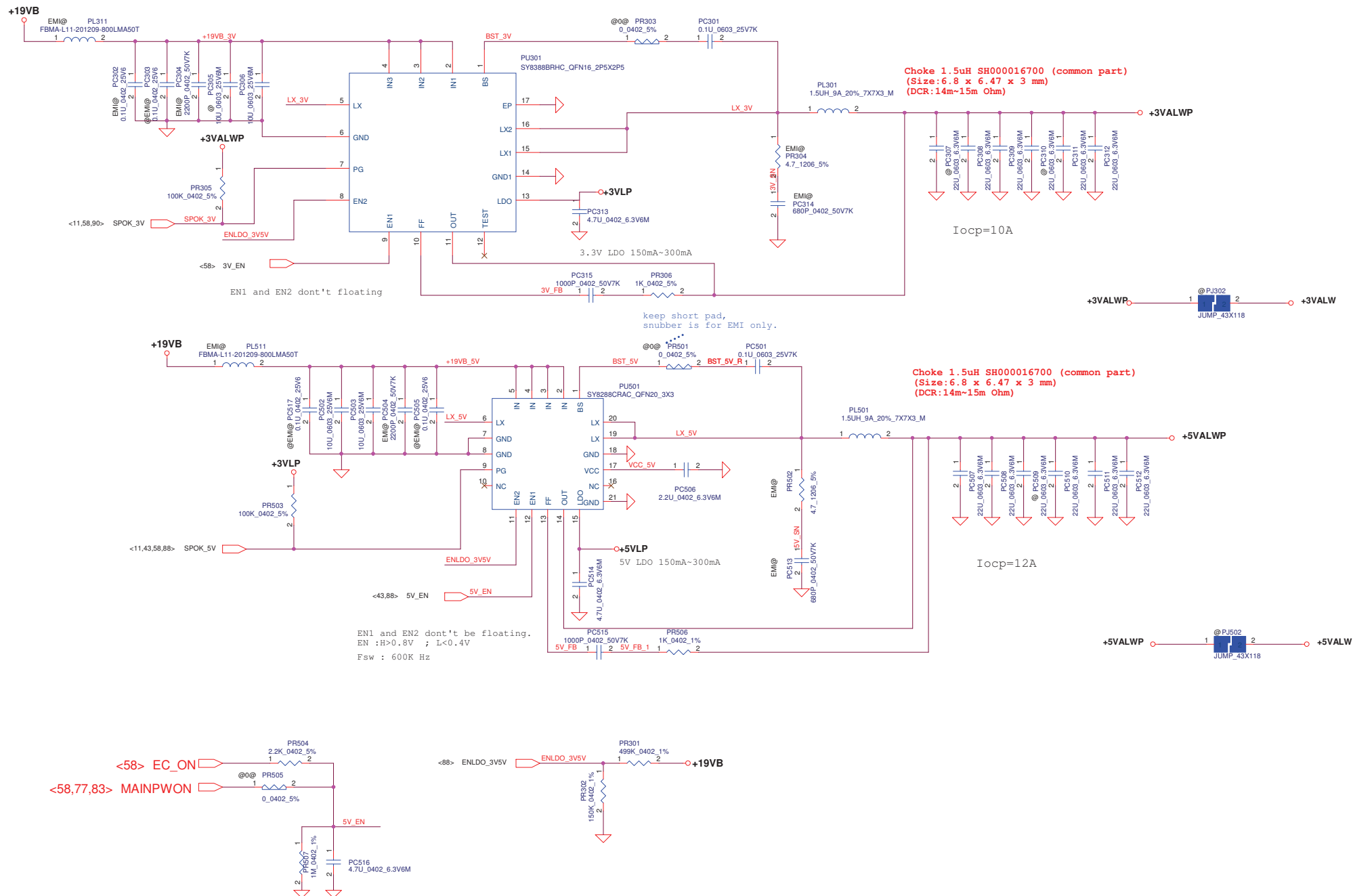
Choke 3.3uH SH00000YD00 (Common Part
(Size:6.6 x 7.3 x 3 mm)

$$3.3 \times 78.7 / (78.7 + 78.7) = 1.65$$
$$ICHG = 1.65 / (20 \times 0.01) = 8.25\%$$


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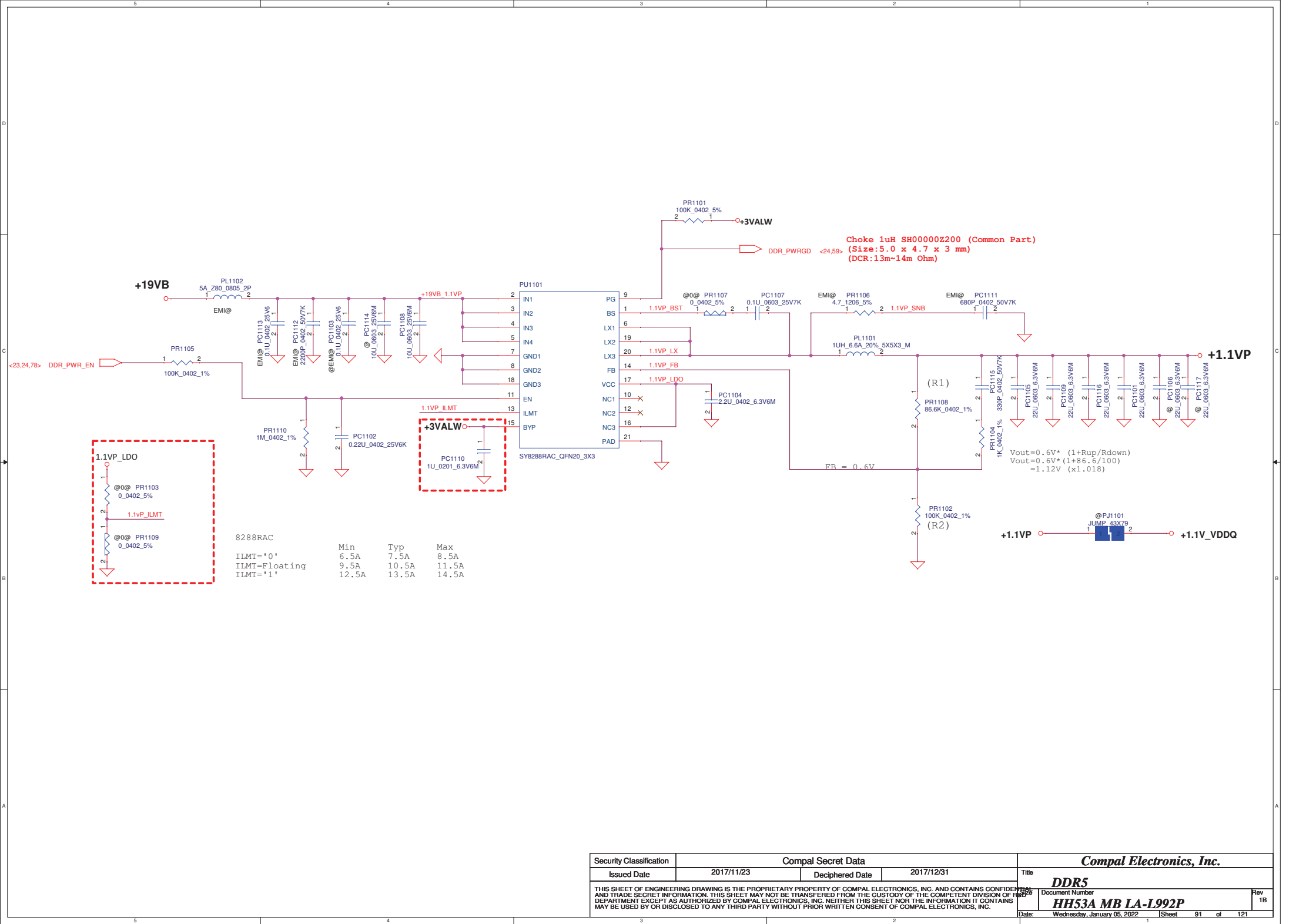
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				+3VALW/+5VALW			
				Size		Document Number	
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				HH53A MB LA-L992P	1B
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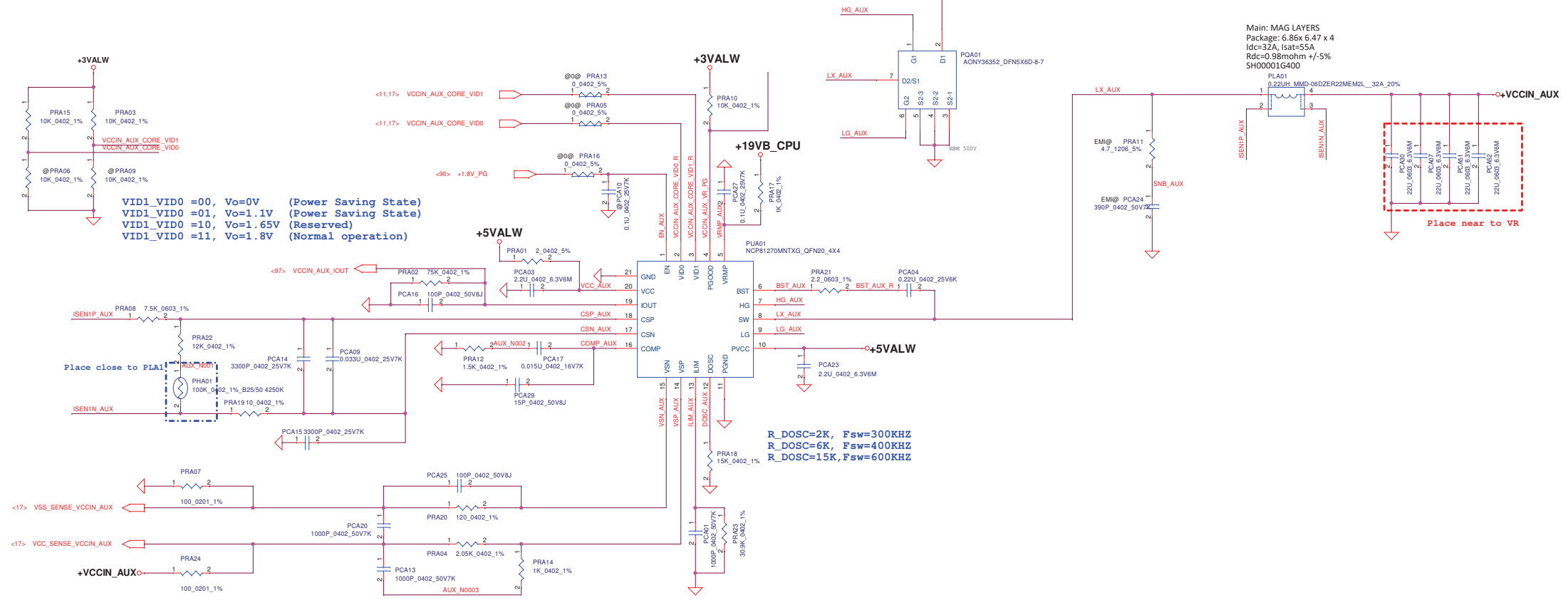
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2017/11/23	Deciphered Date	2017/12/31	Title	Reserve
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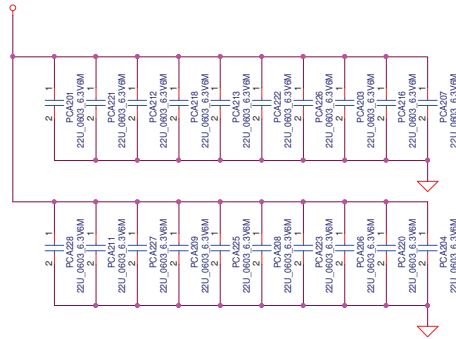
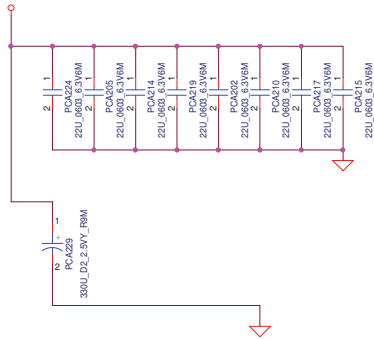
+VCCIN_AUX
Vout 1.8V
IPL2(TDC) = 17A (->BIOS set up x8)
Peak Current = 34.2A (ICCmax) (->BIOS set up x4)
DC Load line: 2.0mohm (->BIOS set up x100)
AC Load line: 3.4mohm (->BIOS set up x100)
OCP: 44.6 A
OVP: VID+0.36V (max 2V)
FSW= 600KHz

2021/09/08
Delete VCCIN_AUX_VR_PG by HW request
To used for RTS5452E current limit.



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330uF_2.5V*1
22uF_0603*28



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Issued Date	2020/02/27	Deciphered Date	2021/12/31	Title	
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Main Func = CPU (IA/GT)

+VCC_CORE
IPL2 = 93A (->BIOS set up x8)
Peak Curren = 160A (ICCMAX) (->BIOS set up x4)
DC Load line: 2.3mohm (->BIOS set up x100)
AC Load line: 2.3mohm (->BIOS set up x100)
Current limit = 200A (OCP)
OVP = VID+0.36V
FSW= 540K Hz
Vboot: 0V

+VCC_GT
IPL2 = 30A (->BIOS set up x8)
Peak Curren = 55A (ICCMAX) (->BIOS set up x4)
DC Load line: 3.2mohm (->BIOS set up x100)
AC Load line: 3.2mohm (->BIOS set up x100)
Current limit = 71A (OCP)
OVP = VID+0.36V
FSW= 540K Hz
Vboot: 0V

Place close to Phase 1 L

Change size from 0603 to 0402.
Because no 0603 component can be used.

PHASE DETECTION

Place close to Dr. MOS

Place close to Dr. MOS

Place close to Phase 1 L

Place close to Phase 1 L

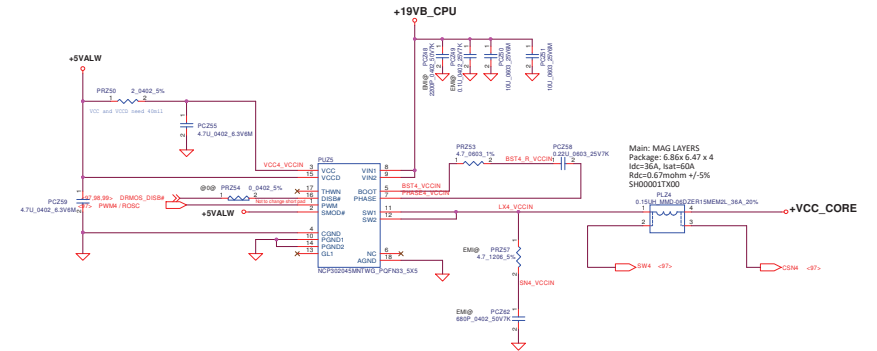
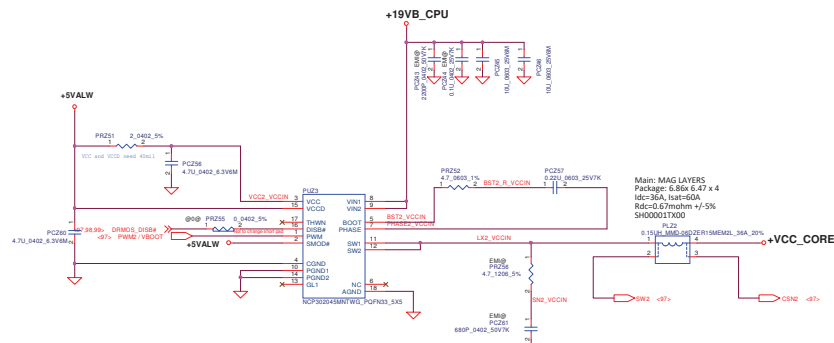
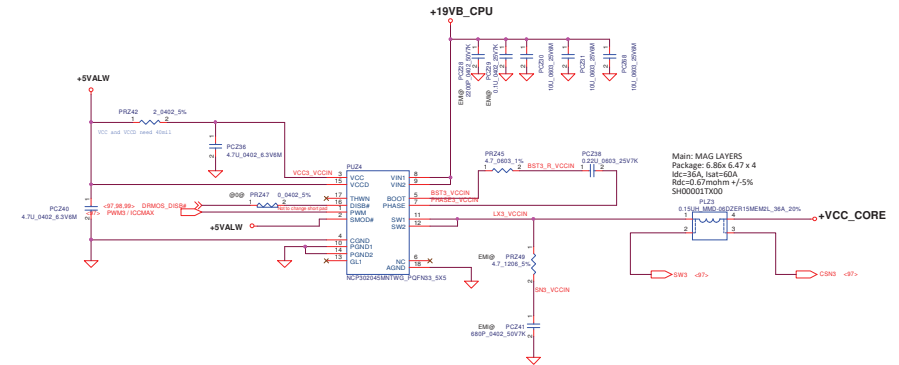
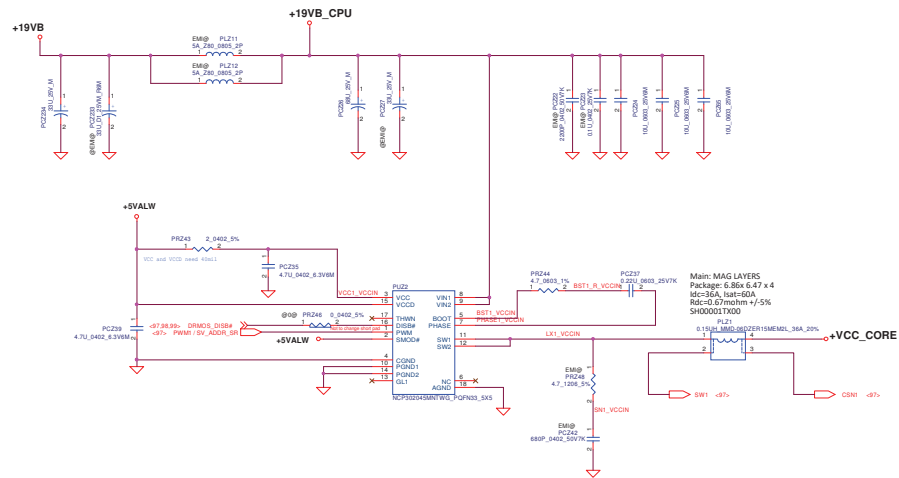
Place close to Phase 1 L

Place close to Phase 1 L

Place close to Phase 1 L

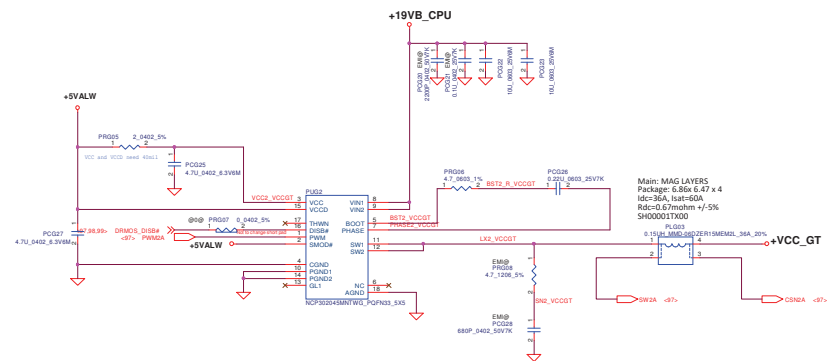
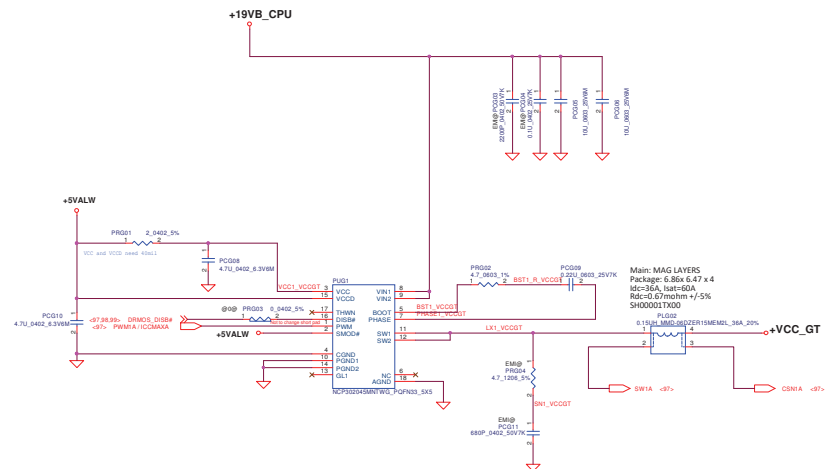
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Main Func = +VCC_CORE



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				Date	Wednesday, January 26, 2022 09:07 18

Main Func = +VCC_GT

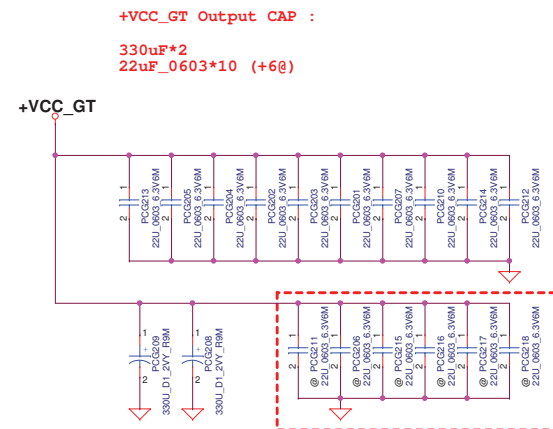
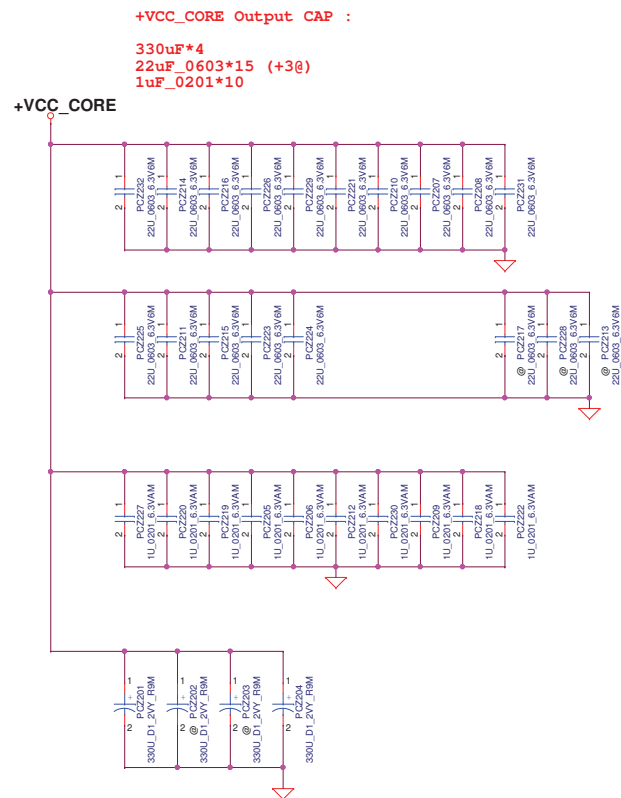


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			Size	Document Number
			Part #	HEXSA MB LA-1549P
			Date	Wednesday, January 26, 2022
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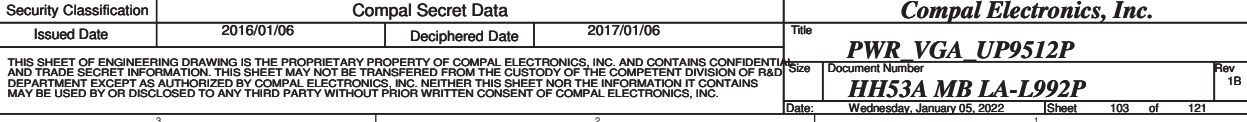
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Issued Date	2019/09/20	Deciphered Date	2020/09/20	Title	Reserve
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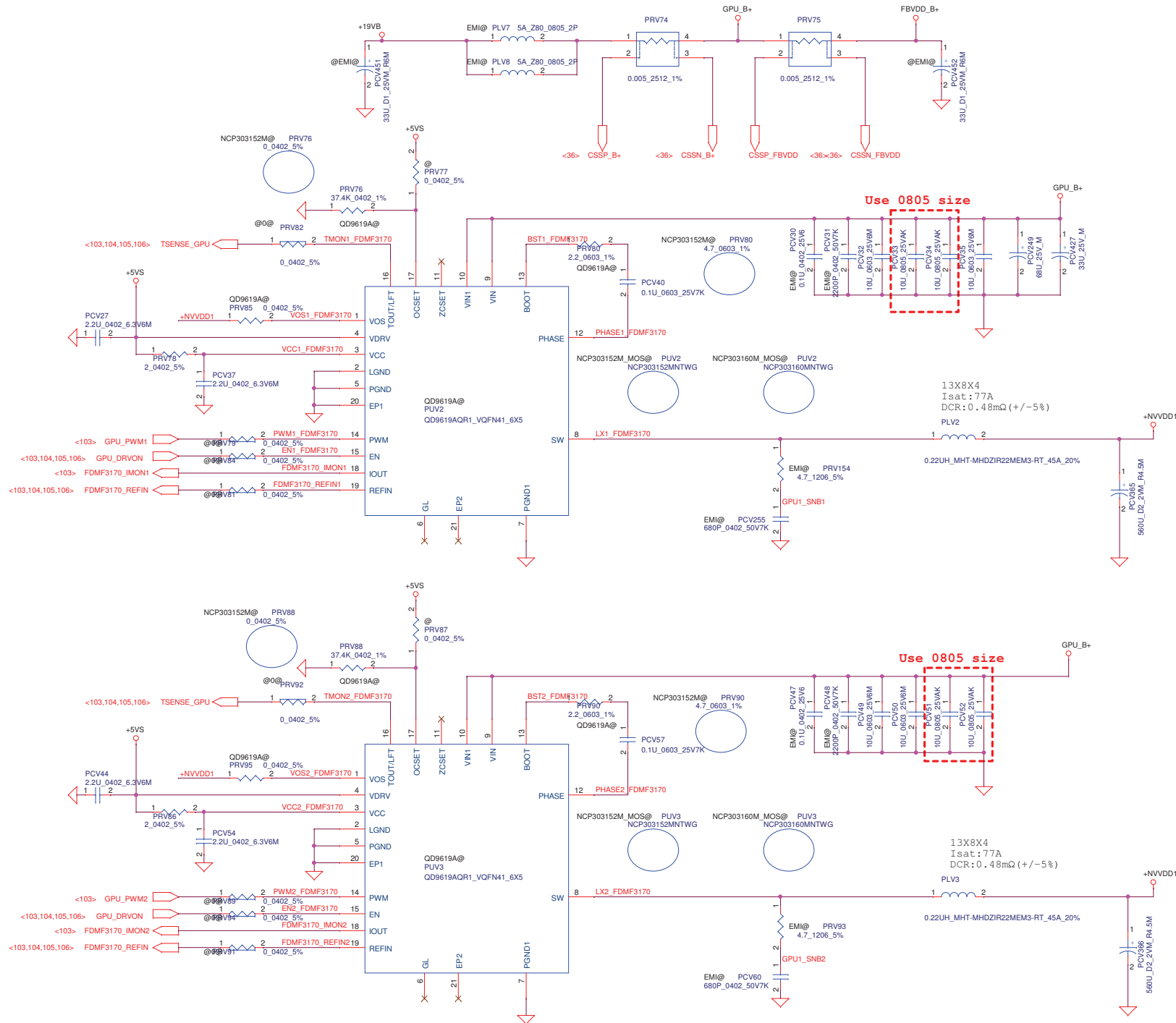
Main Func = +VCCIN DECOUPLING



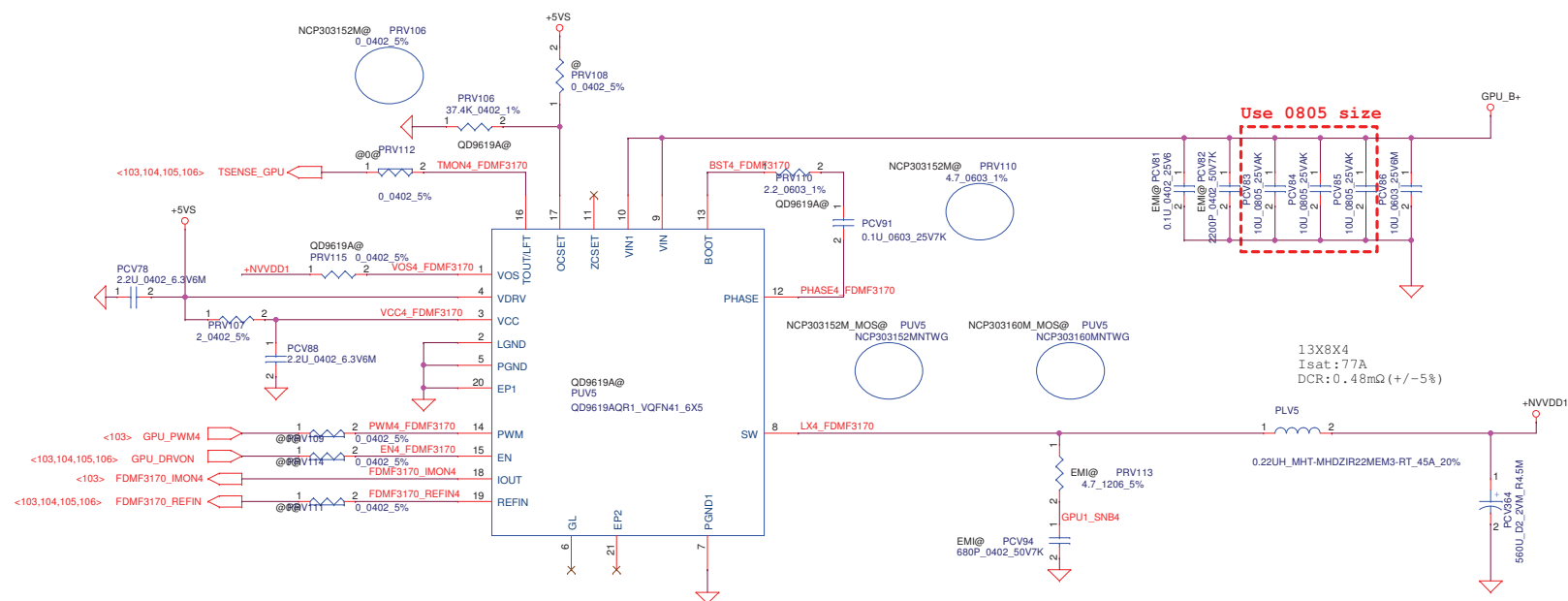
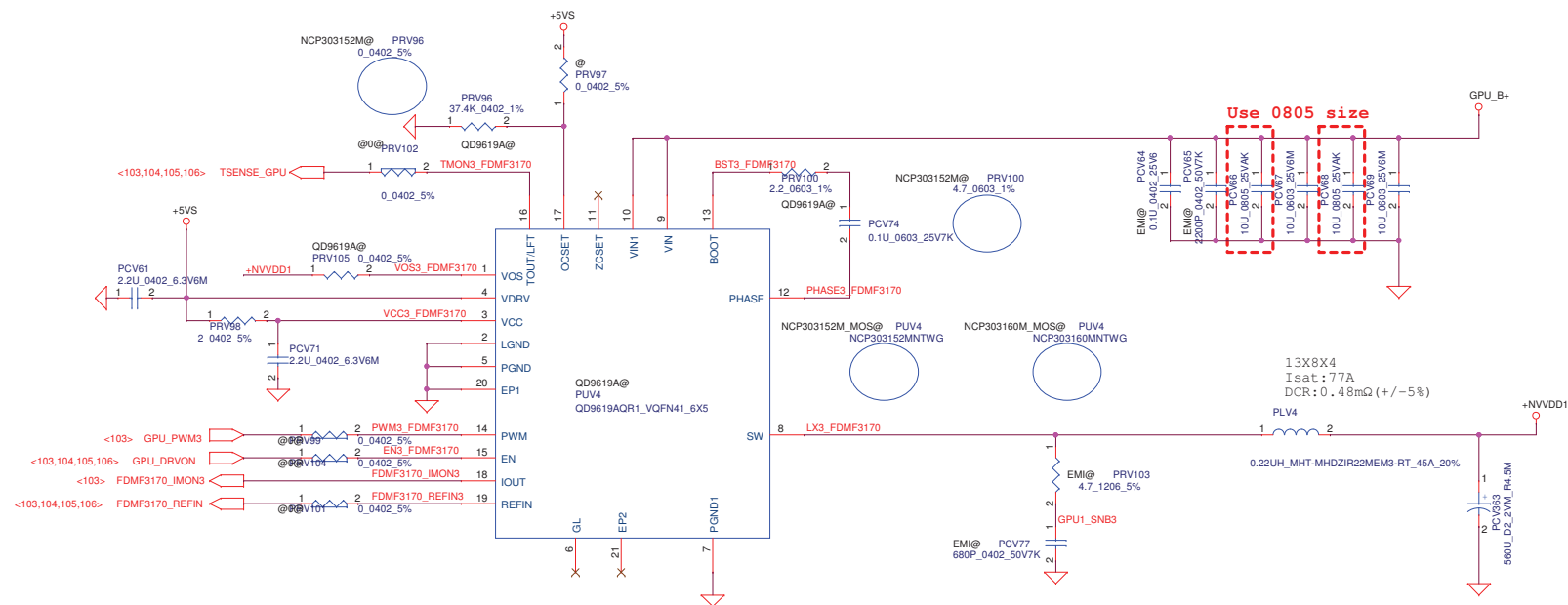
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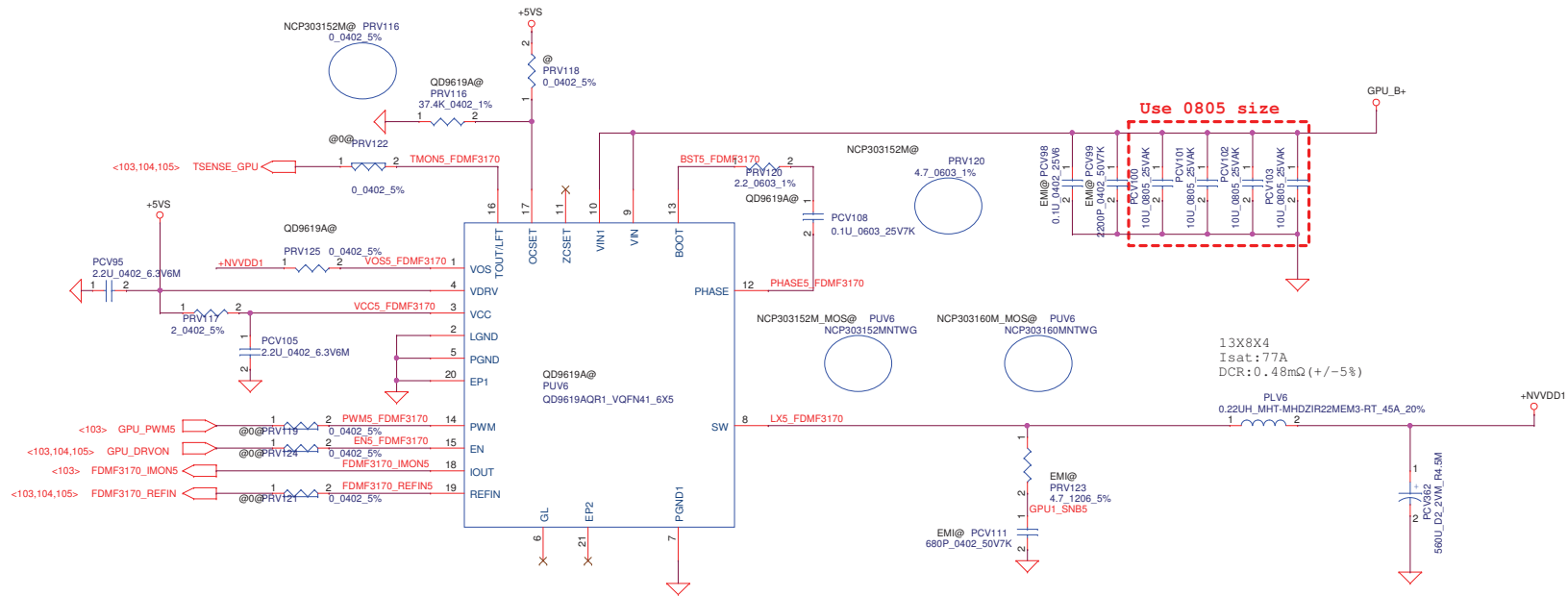




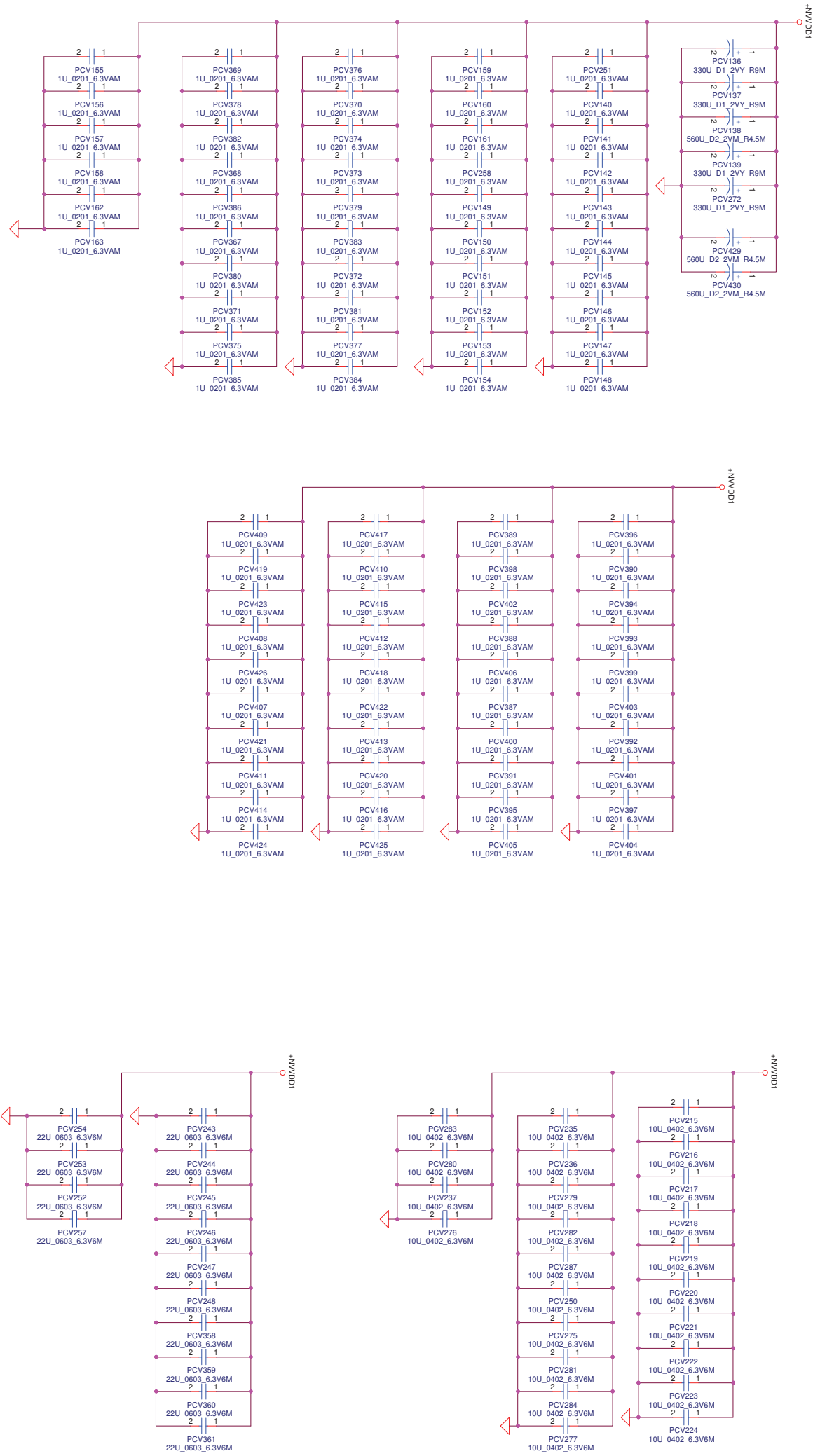
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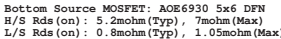
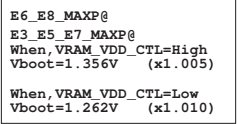


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+NVVDD1	560uF X 8 (5+3)
	330uF X 4
	220uF X 0
	22uF-.0603X 14
	10uF-.0402X 24
	1uF-.0201 X 86

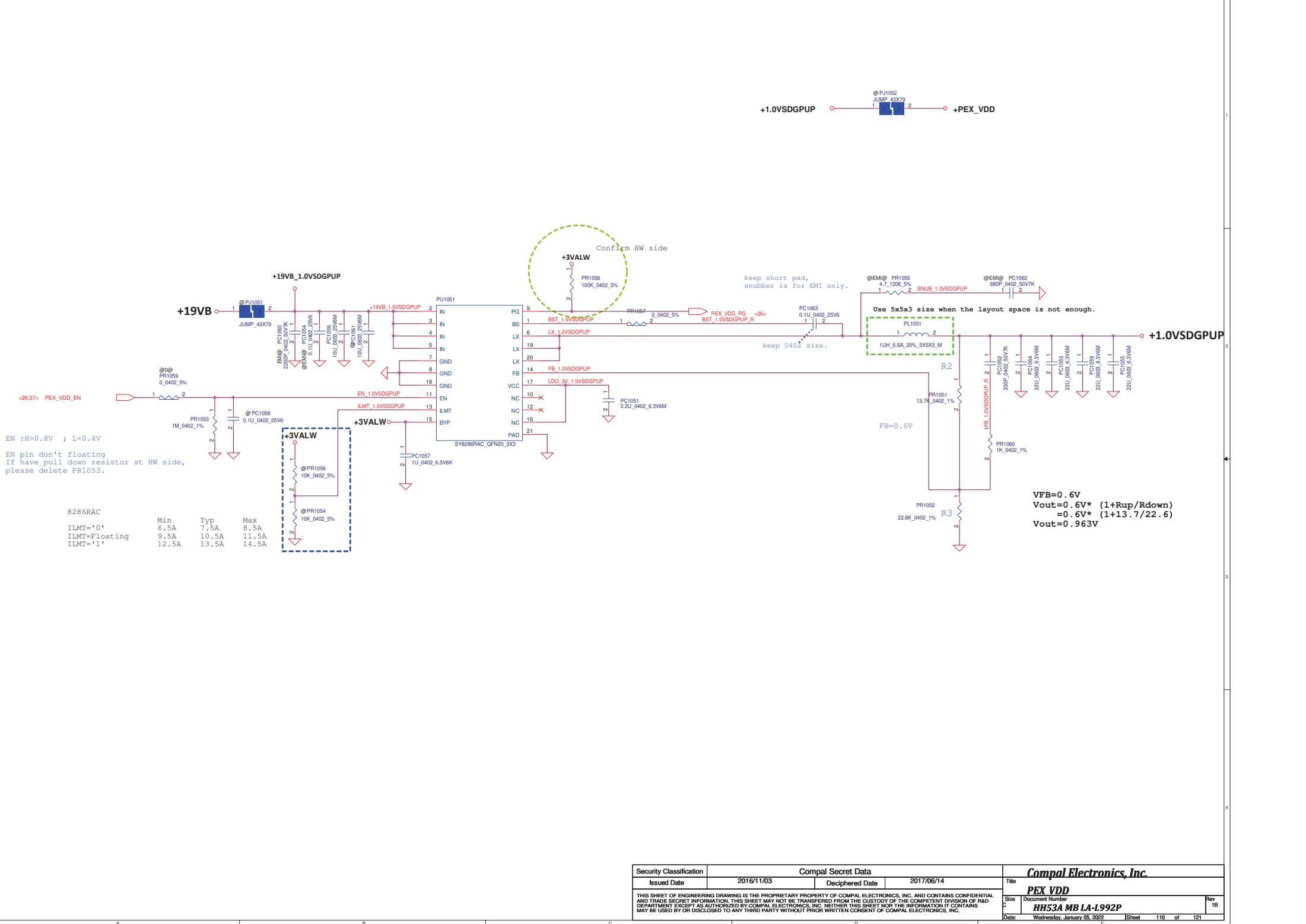
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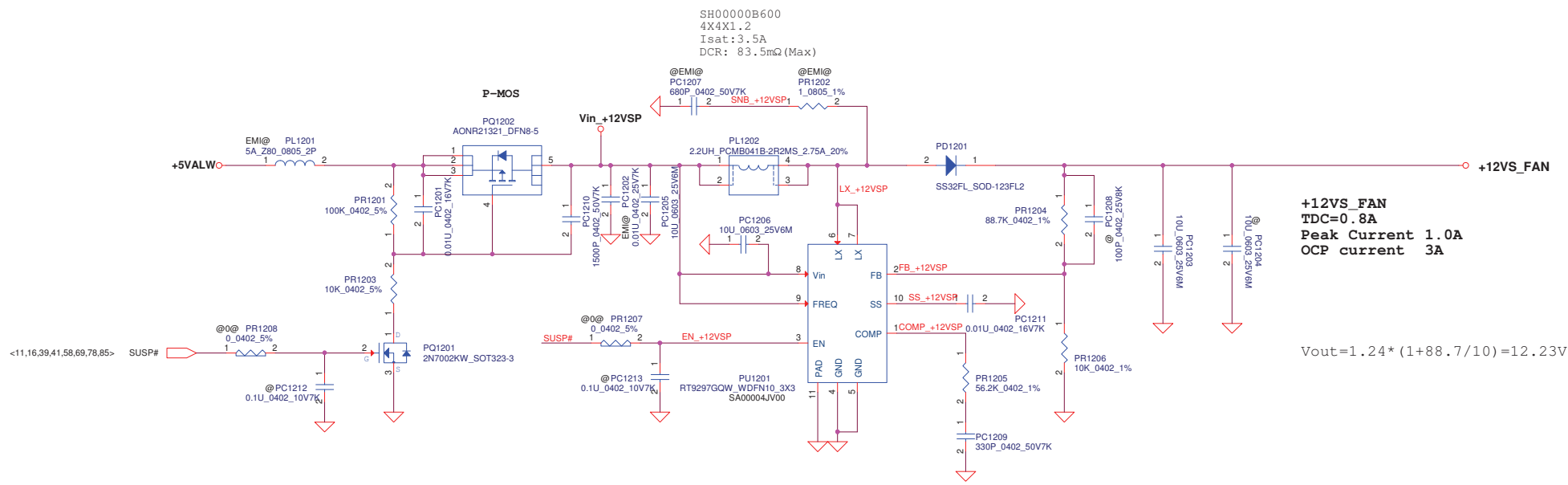
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EN :H>0.8V ; L<0.4V
EN pin don't floating
If have pull down resistor at HW side,
please delete PR1053.

8286RAC			
ILMT='0'	Min 6.5A	Typ 7.5A	Max 8.5A
ILMT=Floating	9.5A	10.5A	11.5A
ILMT='1'	12.5A	13.5A	14.5A

$V_{FB}=0.6V$
 $V_{out}=0.6V * (1+R_{up}/R_{down})$
 $=0.6V * (1+13.7/22.6)$
 $V_{out}=0.963V$



+12VS_FAN
TDC=0.8A
Peak Current 1.0A
OCP current 3A

$V_{out} = 1.24 * (1 + 88.7/10) = 12.23V$

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Item	Reason for change	PG#	Modify List	Date	Phase
01	Solution change	P.085	PQB22,PQB23,PQB24 (2N7002 SOT-323) change from SB000016E00 to SB000009Q80.	0729	DVT
02	PSYS modify	P.097	PRZ03 change from 20K_0402_1% (SD034200280) to 24.9K_0402_1% (SD034249280).	0804	DVT
03	Solution change	P.096, P.101	PCA201,PCA203,PCA204,PCA206,PCA207,PCA208,PCA209,PCA211,PCA212,PCA213,PCA216,PCA218,PCA220,PCA221,PCA222,PCA223,PCA225,PCA226,PCA227,PCA228,PCA202,PCA205,PCA210,PCA214,PCA215,PCA217,PCA219,PCA224,PCG201,PCG202,PCG203,PCG204,PCG205,PCG207,PCG210,PCG212,PCG213,PCG214,PCZ207,PCZ208,PCZ210,PCZ211,PCZ214,PCZ215,PCZ216,PCZ221,PCZ223,PCZ224,PCZ225,PCZ226,PCZ229,PCZ231,PCZ232 change from 22U_0603_6.3VAM (SE00001CA10) to 22U_0603_6.3V6M (SE00000M000).	0804	DVT
04	Solution change	P.085	PRB42 change from 0.01_2512_1% (SD00002A630) to 0.005_2512_1% (SD00001SZ00). PRB4 change from 0.01_2512_1% (SD00002A630) to un-pop. PRB37 connect net change from +19V_VIN to +19V_ADPIN_P1.	0811	DVT
05	12V_Fan fine turn	P.111	PR1205 change from 10K_0402_1% (SD034100280) to 56.2K_0402_1% (SD000001580). PC1209 change from 4700P_0402_25V (SE075472K80) to 330P_0402_50V (SE074331K80).	0811	DVT
06	Solution change	P.095, P.097 P.098, P.099	PCA03,PCA23,PCZ07 change from 2.2U_0402_6.3VAM (SE000011Z80) to 2.2U_0402_6.3V6M (SE000008880). PCA04 change from 0.22U_0402_25VAK (SE000013J00) to 0.22U_0402_25V6K (SE000015W00). PCZ55,PCZ59,PCG08,PCG10,PCG25,PCG27,PCZ35,PCZ36,PCZ39,PCZ40,PCZ56,PCZ60 change from 4.7U_0402_6.3VAM (SE00001BY00) to 4.7U_0402_6.3V6M (SE00000S000). PCA07,PCA30 change from 47U_0603_2.5VAM (SE00001FQ00) to 22U_0603_6.3V6M (SE00000M000). Add new location PCA51,PCA52 and pop 22U_0603_6.3V6M (SE00000M000).	0813	DVT
07	EMI Request	P.098, P104	PCZ27 change from pop to unpop Add new location PCZ233 and unpop 33U_25V Pos Cap(SGA0000A400) Add new location PCZ234 and pop 33U_25V OS Con (SF000007700) Add new location PCV451,PCV452 and unpop 33U_25V Pos Cap(SGA0000A400)	0830	DVT
08	CPU transient fine turn	P.095, P.097 P.101	PCA14 change from unpop to pop 3300P_0402_25V (SE075332K80). PUZ01 change PN from SA0000E6B10 (PC0) to SA0000E6B20 (PD0). PRZ18,PRZ20,PRZ14,PRZ74 change from 75K_0402_1% (SD034750280) to 140K_0402_1% (SD034140380) PCZ08,PCZ167 change from 390P_0402_50V (SE074391K80) to 270P_0402_50V (SE074271K80) PRZ77 change from 49.9K_0402_1% (SD034499280) to 24.3K_0402_1% (SD00000AT80) PRZ69,PRZ70 change from 47.5K_0603_1% (SD00000NN80) to 51.1K_0603_1% (SD014511280) PCZ202,PCZ203 change from pop 330U_D2_2V (SGA00009500) to unpop.	0830	DVT
09	Solution change	P.107	PCV429,PCV430 change from 220U_D7_2V (SGA0000AM00) to 560U_D2_2V (SGA00006J00). PCV136,PCV137 change from 560U_D2_2V (SGA00006J00) to 330U_D2_2V (SGA00009500).	0830	DVT
10	PD IC Solution change	P.083	Add new location PQ210, PQ212, and pop AONR21357 (SB00001MT00) Add new location PQ211 and pop 2N7002KW (SB000009Q80) Add new location PR220 and pop 49.9K_0402_1% (SD034499280) Add new location PR221 and pop 499K_0402_1% (SD034499380) Add new location PC203 and pop 2200P_0402_25V (SE075222K80)	0823	DVT
11	CIS symbol update	P.098, P.099	PUZ2, PUZ3, PUZ4, PUZ5, PUG1 and PUG2 update CIS symbol and re-link	0913	DVT
12	EMI Request	P.087, P.088 P.090, P.091	PR304,PR502,PR552,PR1106, PR1802 change from un-pop to pop 4.7_1206_5% (SD001470B80). PC314,PC513,PC563,PC1111, PC1806 change from un-pop to pop 680P_0402_50V (SE074681K80).	0917	DVT
13	CPU transient fine turn (GT prak 50A->55A)	P.097	PRZ103 change from 32.4K_0402_1% (SD034324280) to 33.2K_0402_1% (SD034332280). PRZ33 change from 49.9K_0402_1% (SD034499280) to 54.9K_0402_1% (SD00000H880). PRZ107 change from 21.5K_0402_1% (SD034215280) to 24.3K_0402_1% (SD00000AT80).	1001	DVT
14	Solution change	P.082, P.091 P.095, P.097 P.099, P.098 P.103, P.083 P.085, P.111 P.090, P.108	PR201 change from pop 0_0402_5% (SD028000080) to un-pop. PQ151 footprint change from "B5S138LT16_SOT23-3" to "LB5S139LT16_SOT23-3" PRA05,PRA13,PRA16,PRB16,PRZ10,PRZ21,PRZ22,PRZ30,PRZ41,PRZ98,PR1207,PR1208,PRG03,PRG07,PRZ46,PRZ47,PRZ54,PRZ55,PRB13,PRB17,PRB21,PRV1,PRV12,PR1811,PRV13,PRB51 change from pop 0_0402_5% (SD028000080) to R-short. (total 26 pcs) PR1105 change from 0_0402_5% (SD028000080) to 100K_0402_1% (SD034100380). PC1102 change from un-pop to pop 0.22U_0402_25V6K (SE000015W00). PRW25 rename PRW31 change from 36.5K_0402_1% (SD034365280) to 60.4K_0402_1% (SD034604280)	1012	PVT
15	Solution change	P.095	PRA03 PRA15 change from un-pop to pop 10K_0402_5% (SD034100280).	1116	PVT

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